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Health and Recrecreation Center
and
Cogeneration System

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Environmental Impact Report
83.469E

Publication Date: March 22, 1985
Public Hearing Date: April 25, 1985
Public Comment Period: March 22, 1985 to May 10, 1985

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March 22, 1985

TO: Distribution List for USF EIR

FROM: Alec S. Bash, Environmental Review Officer

SUBJECT: Request for the Final Environmental Impact Report for the USF Health and Recreation Center and Cogeneration System Projects

This is the draft of the Environmental Impact Report (EIR) for the University of San Francisco projects. A public Hearing will be held on the adequacy and the accuracy of this document on April 25, 1985. After the public hearing, our office will prepare and publish a document titled "Summary of Comments and Responses," which will contain a summary of all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the draft will automatically receive a copy of the Comments and Responses document along with notice of the date reserved for certification (usually about 9 weeks after the hearing on the draft); others may receive such copies and notice on request or by visiting our office. This Draft EIR, together the Summary of Comments and Responses document, will be considered by the City Planning Commission in an advertised public meeting and certified as a Final EIR if deemed adequate.

After certification, we will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final Environmental Impact Report. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one rather than two documents. Therefore, if you receive a copy

of the Comments and responses document in addition to the this copy of the of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Summary of Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR to private individuals only if they request them.

If you want a copy of the Final EIR, please so indicate in the space provided on the next page and mail the request to the Office of Environmental Review within two weeks after certification of the Final EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR. Copies will also be available at the Department of City Planning, 450 McAllister Street - 5th Floor, San Francisco, CA 94102.

Thank you for your interest in this project.

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University of San
Francisco health and
1985.

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Please send me a copy of the Final Environmental Impact Report for the USF Health and Recreation Center and Co-generation Projects.

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UNIVERSITY OF SAN FRANCISCO

HEALTH AND RECREATION CENTER

and

COGENERATION FACILITY

DRAFT ENVIRONMENTAL IMPACT REPORT

83.469E

Publication Date: March 22, 1985

Public Hearing Date: April 25, 1985

Public Comment Period: March 22, 1985 to May 10, 1985

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CHAPTER I. SUMMARY

A. Project Description

The project sponsor, the University of San Francisco (USF), proposes to construct a Health and Recreation Center and a Cogeneration System on its campus. The Health and Recreation Center would provide recreational facilities for University students, faculty, staff, alumni and neighborhood residents. The Cogeneration System would partially replace an aging boiler system on the USF campus.

The proposed Health and Recreation Center would be located on Lots 1 and 1B in Assessor's Block 1144 (275,400 sq. ft.), bounded by Stanyan St. to the west, Turk St. to the north and Parker Ave. to the east. The site currently contains Loyola Hall, Loyola Gym, Negoesco Soccer Field and three parking lots.

The proposed Health and Recreation Center would be one building composed of four contiguous units: the existing Loyola Gym, a new Racquetball Court Building, a new Natatorium and a new Multi-Purpose Courts Building. These four units would be connected by glass atria and would occupy about 119,000 square feet. Negoesco Soccer Field would be rehabilitated and the spectator stands would be moved from the west to the east side of the field; a press box and public bathrooms would be incorporated into these new stands. The existing parking lots on the project site would be consolidated into one lot at the corner of Turk St. and Parker Ave.

I. Summary

The proposed Cogeneration System would be installed in the existing Steam Plant beneath Gleeson Library, located in Lot 1 in Assessor's Block 1145, fronting Golden Gate Ave. between Chabot Terrace and Temescal Terrace.

The Cogeneration System would produce both steam (capacity of about 6,700 lb./hr.) and electricity (capacity of 1.8 mW). The steam produced would be used to heat existing USF campus buildings. Electricity would be generated for use on campus. Cogeneration equipment would include a natural gas fired engine-generator, a boiler, piping and controls. A heat radiator unit measuring 11 ft.x 9 ft.x 8 ft. would be placed atop the Library roof underneath an existing canopy.

The proposed project has changed its scope between the publication of the Initial Study (see pp. A-1 to A-22) and the preparation of the Preliminary Draft EIR. The Cogeneration System was originally the only facet of the proposed project. The project sponsor decided to reduce the Cogeneration System in size and move it from the Cole Street site to the Gleeson Library site after the Initial Study was published. The environmental reviews for the Health and Recreation Center project and the Cogeneration System project have been combined in this Environmental Impact Report since the two projects would both be sited on the University's campus and the two have been submitted for review within the same time frame. However, the two projects are not dependent on each other and could be built at different times.

At the time the University of San Francisco submitted its 1983 revised campus master plan to the San Francisco Planning Commission, both a cogeneration project and a windmill project were included in the USF energy management program. Initial environmental evaluation raised concerns that led USF to

delete the windmill project from its energy program. The windmill project is, therefore, noted only as a discarded alternative in this document. If, at any time in the future, USF proposes a windmill project, that project would be subject to independent environmental review. The proposed Health and Recreation Center site was introduced in the May 1979 USF Master Plan. For a more detailed discussion of Project Description see Chapter II, pp. 11 to 31.

B. Environmental Effects

Energy

The cogeneration project would cause a net decrease in regional fossil fuel consumption by about 1,800 barrels of oil per year because of the greater efficiency of cogeneration as compared to separate production of electricity and steam. However, the Cogeneration System would increase the use of natural gas at USF by approximately 225 therms/hr.[3] (see Chapter III, Section A, pp. 55 to 59 for further discussion).

Air Quality

Combustion of natural gas by the Cogeneration System would produce air pollutants; nitrogen oxide, carbon monoxide and hydrocarbons would be discharged from the exhaust stack at the facility. Of these pollutants, only nitrogen oxides (NO_x) would require the implementation of Best Available Control Technology (BACT) to reduce air emissions. BACT for NO_x would be incorporated in the project design in the form of a "lean-burning engine." These air pollutants would not be expected to adversely affect persons in the vicinity of the project. See Chapter III, Section B, pp. 60 to 64 for an analysis of air quality impacts.

Noise

Noise generated by Recreation Center users would not be expected to increase the existing background noise level in the nearest residential area. Noise levels generated by the Cogeneration System would, at worst case, be equal to noise levels of the existing setting.

During the 18-month construction period, construction noise audible in neighboring residences would occasionally be high enough to interfere with conversation and other activities. See Chapter III, Section C, pp. 64 to 72 for further discussion and Appendix C, pp. A-24 to A-27, for more information regarding technical aspects of environmental noise.

Transportation, Circulation and Parking

During the 18-month construction period of the Health and Recreation Center and Cogeneration System, construction employee vehicle activity would generate approximately 100 vehicle trips during the PM commute period. Construction vehicle activity would average six truck stops per day during the first three and last six months, and five per day during the middle nine months. Installation of the Cogeneration System would create an average of two truck trips per day during the first four months of construction.

Operation of the the Recreation Center would generate about 4,000 weekday trips, 2,500 Saturday trips and 3,200 Sunday trips. Approximately 95% of these trips would be made by students, faculty and staff of the University and would not represent new trips from off-campus. The remaining 5% of the trips (200 on weekdays, 125 on Saturdays and 160 on Sundays) would be new trips generated by University alumni and community users of the new facility. The peak hour of use by alumni and community residents would occur

between 6:00 PM and 7:00 PM on weekdays, during which about 47 new trips would be made. The volume to capacity during the PM peak hours (4:30 PM to 6:30 PM) at the intersection of Parker Ave. and Turk St. would remain at Level of Service A, and that at Stanyan and Turk Sts. intersection would remain at Level of Service B.

Parking on the site (currently 185 spaces in three lots) would be consolidated into one 172-space lot for a net deficit of 13 spaces on-site. The proposed Health and Recreation Center would not have measurable effects on transit lines serving the area. Approximately 2200 new pedestrian trips to the site would be generated by the Health and Recreation Center project (see Chapter III, Section D, pp. 72 to 79 for a discussion of Traffic impacts).

Land Use

The proposed Health and Recreation Center and Cogeneration System projects would require Conditional Use Authorizations to operate institutional facilities in a residential district (RH-2; House, Two Family). The Health and Recreation Center and the Cogeneration System would be within the height and bulk limits stipulated for 40-X and 80-D Height and Bulk Districts (see Chapter III, Section E, pp. 80 to 81 for further discussion).

Visual Quality

The Health and Recreation Center buildings would be visible from adjacent properties to the north, west and east (along Turk St., Stanyan St. and Parker Ave.). Some residents on McAllister St. would be able to view the project. The height of the Recreation Center would be 20 ft. lower than

that of the existing Loyola Hall. The frontage along Parker Ave., Turk and Stanyan Sts. would be landscaped.

The Cogeneration System would be entirely underground, with the exception of an exhaust stack and a heat radiator unit. The Cogeneration exhaust stack would be entirely contained within the existing exhaust stack adjacent to Gleeson Library. The heat radiator unit would be underneath a canopy atop Gleeson Library, and would thus have no visual impact on the adjacent residences (see Chapter III, Section F, pp. 81 to 85 for further discussion of visual quality impacts).

Hazards/Fire Safety

Potential hazards associated with the use of natural gas in the Cogeneration System would include leaks, fire and/or explosion. Safety measures would include gas detection shut-off devices and a failsafe, continually self-checking, automatic fire detection/suppression system. All buildings of the proposed projects would have automatic fire sprinklers (see Chapter III, Section G, pp. 85 to 87 for further discussion of Hazard Impacts).

Growth Inducement

Neither of the projects proposed by the University would serve to stimulate development of additional projects, either on or off campus. They would instead serve the needs of the existing student population (see Chapter III, Section H, pp. 87-88).

C. Major Mitigation Measures

Noise

° The Cogeneration System would be enclosed in an acoustically treated shell to reduce its noise to levels equivalent to those of the existing Steam Plant.

° The air intakes and exhaust outlets (including the heat radiator unit) of the Cogeneration System would be equipped with silencers to reduce noise measured at the nearest homes to levels that would not exceed ambiant criteria.

° The heat radiator unit would be run at low-speed during the nighttime to reduce noise.

° The heat radiator would be encased in a noise insulating enclosure that would reduce noise levels to those within the respective daytime and nighttime ambient ranges.

Transportation, Circulation and Parking

° The general contractor for the project would meet with the Department of Public Works to establish construction vehicle routes that would minimize impacts to residents and existing businesses in the vicinity of the project site.

° USF would apply its existing program of encouraging the use of public transit to users of the proposed Recreation Center by providing transit maps and information in appropriate locations and through the sale of MUNI Fast Passes on campus.

° On-campus parking lots would be restriped and re-engineered to add park-

ing spaces to offset the 13 space reduction in on-site parking.

Visual Quality

° The project site would be landscaped along circulation paths and in front of Parker Ave., Turk and Stanyan Sts.

° Exposed glass surfaces would be screened with trees and shrubs to reduce glare.

° The Cogeneration System would be installed in an existing basement out of sight.

D. Alternatives to the Proposed Project

Alternative 1. Recreation Center at Ulrich Field

The Health and Recreation Center would be located at Ulrich Field on the east side of the campus along Masonic Ave. Land use, visual, and construction impacts would be greater than those of the proposed Health and Recreation Center. This alternative has been rejected by the project sponsor (see Chapter VII, pp. 95 to 98 for a further discussion of Alternative 1).

Alternative 2. Conversion of Loyola Hall

Rehabilitation of the present building on site into a Recreation Center is discussed. Construction impacts of this alternative would be less than for the proposed project. Other impacts associated with the Health and Recreation Center would be similar. Alternative 2 is discussed futher in Chapter VII, pp. 98 to 99. The project sponsor has rejected this alternative on the grounds that Loyola Hall, completely gutted, would not provide enough space for the facilities contemplated.

Alternative 3. Health and Recreation Center Not Built

The Health and Recreation Center would not be built. The project site would remain in its present condition. This alternative does not meet the project sponsor's goal of creating additional recreational facilities on the USF campus and may result in declining student enrollment because of the continued overcrowding of present athletic facilities (see Chapter VII, pp. 99 to 100).

Alternative 4. 9.5 mW Cogeneration Facility

A 9.5 mW Cogeneration Facility is discussed at four possible locations: Cole St. site, Gleeson Library site, Fulton St. site and the Loyola site. Construction, and its related traffic, plus noise and air quality impacts of this alternative would be greater than for the proposed system. The University has rejected the 9.5 mW alternative with the feeling that a facility of this size would not be an appropriate use for the campus nor for the surrounding residential neighborhood. See Chapter VII, pp. 100 to 110 for further discussion of this Alternative.

Alternative 5. Alternate Energy Sources

Photovoltaic cells and windmills were considered as alternate energy sources for the project. These alternatives would have a greater land requirement than the proposed cogeneration project. Project sponsor has rejected this alternative because there is not enough space on the USF campus for the cells or windmills needed to generate USF's electricity demand (see Chapter VII, pp. 111 to 112).

Alternative 6. Alternate Cogeneration Fuels

A Cogeneration System which would burn liquid fuel (diesel or fuel oil) or solid waste instead of natural gas is considered. The cost and air quality impacts of this alternative would be greater than those of the proposed cogeneration project. This alternative has been rejected because of the air quality impacts associated with burning liquid fuel or solid waste. See Chapter VII, pp. 112 to 115 for further discussion of this alternative. See Chapter VII, p. 117 for further discussion.

Alternative 7. Cogeneration System Not Built

None of the exisiting campus boilers would be replaced in this alternative. USF would not produce electricity for its own needs and a conventional boiler large enough to serve all of the space and water heating demands of the proposed Health and Recreation Center would have to be constructed. This boiler would produce emissions similar to the existing campus boilers. Noise, air quality, and contruction related impacts would not occur with this alternative.

Alternative 8. No Project

Loyola Hall and Loyola Gym would remain in their present condition as would the soccer field and the parking lots on the project site. Steam would continue to be produced at the 25 year old main boiler plant currently operating at USF. Annual campus energy costs could rise from the current $1.34 million (1982) to about $3.9 million by the year 1989. The existing campus boilers would require replacement in the near future (see Chapter VII, p. 116).

CHAPTER II. PROJECT DESCRIPTION

A. Project Sponsor's Objectives

The University of San Francisco, the project sponsor, proposes to construct a Health and Recreation Center and install a Cogeneration System on its campus. The Health and Recreation Center project would improve and increase the recreational facilities available to current and future enrollees of the University. The University currently conducts physical education classes at various locations on its campus and also at some San Francisco City facilities. The proposed Recreation Center would integrate many intramural sports activities into a single, modern center on campus to serve the students, faculty, staff and alumni of USF, as well as the surrounding community.

To insulate itself against rising energy costs, the University would partially replace an aging steam plant used for campus heating with a Cogeneration System that would produce electricity and steam for campus use. The sponsor has engaged the services of Pflueger Architects to design the Health and Recreation Center. FMC Associates, Engineers and would design and install the Cogeneration System.

Environmental analysis of the Health and Recreation Center and Cogeneration System are combined in this document because both would be on the USF campus and are being planned at the same time. However, these two projects would not be dependent on each other and could be built at different times.

B. Project Location

The two projects contemplated, although within the boundaries of the University, would be constructed on separate Assessor's Blocks and Lots. For reasons of clarity, the two project sites will be referred to in this document as the Health and Recreation Center site and the Cogeneration System site.

The Health and Recreation Center site is located on Lots 1 and 1B in Assessor's Block 1144, bounded by Stanyan St. to the west, Turk St. to the north and Parker Ave. to the east (see Figures 1-2, pp. 13-14). The Health and Recreation Center site is in a RH-2 (House, Two Family) Zoning District. The majority of the project block is in a 40-X Height and Bulk District. The southern portion of the soccer field and the southern border of the site are in a 80-D Height and Bulk District.

The Cogeneration System would replace two of the four steam boilers in the existing steam plant located beneath Gleeson Library, Lot 1, in Assessor's Block 1145, fronting along Golden Gate Ave. between Chabot Terrace and Temescal Terrace.

C. Project Characteristics

Health and Recreation Center

The proposed Health and Recreation project would involve the entire University owned parcel on Block 1144 (see Figure 3, p. 15). Construction would occur primarily along Stanyan St. A 172-space parking lot (48,000 sq. ft.) would be constructed by consolidating all three lots currently on site into one lot located on the northern portion of Block 1144 along

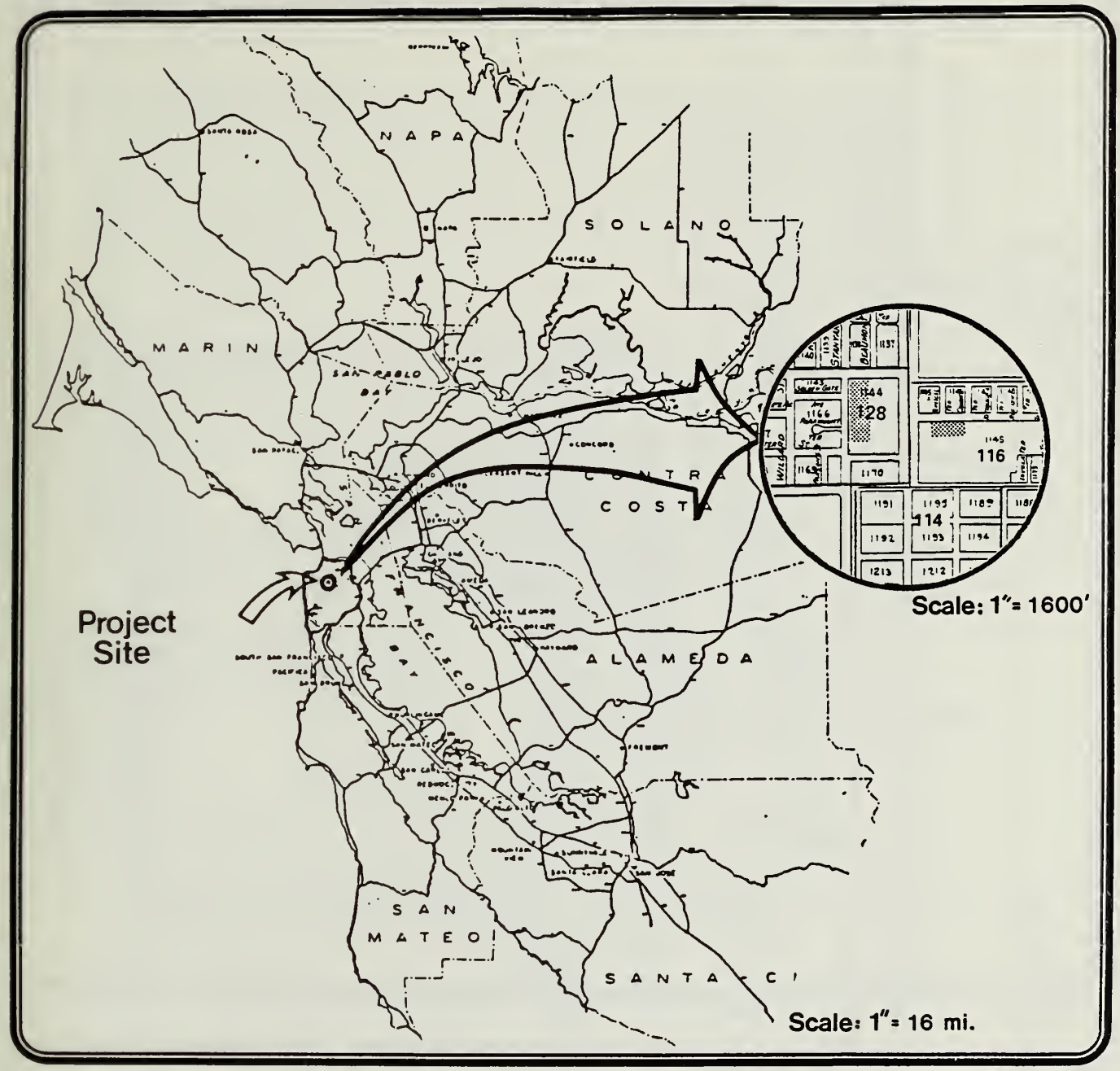

FIGURE 1

REGIONAL LOCATION

USF HEALTH AND RECREATION CENTER and COGENERATION SYSTEM

PROJECT SITE

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SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

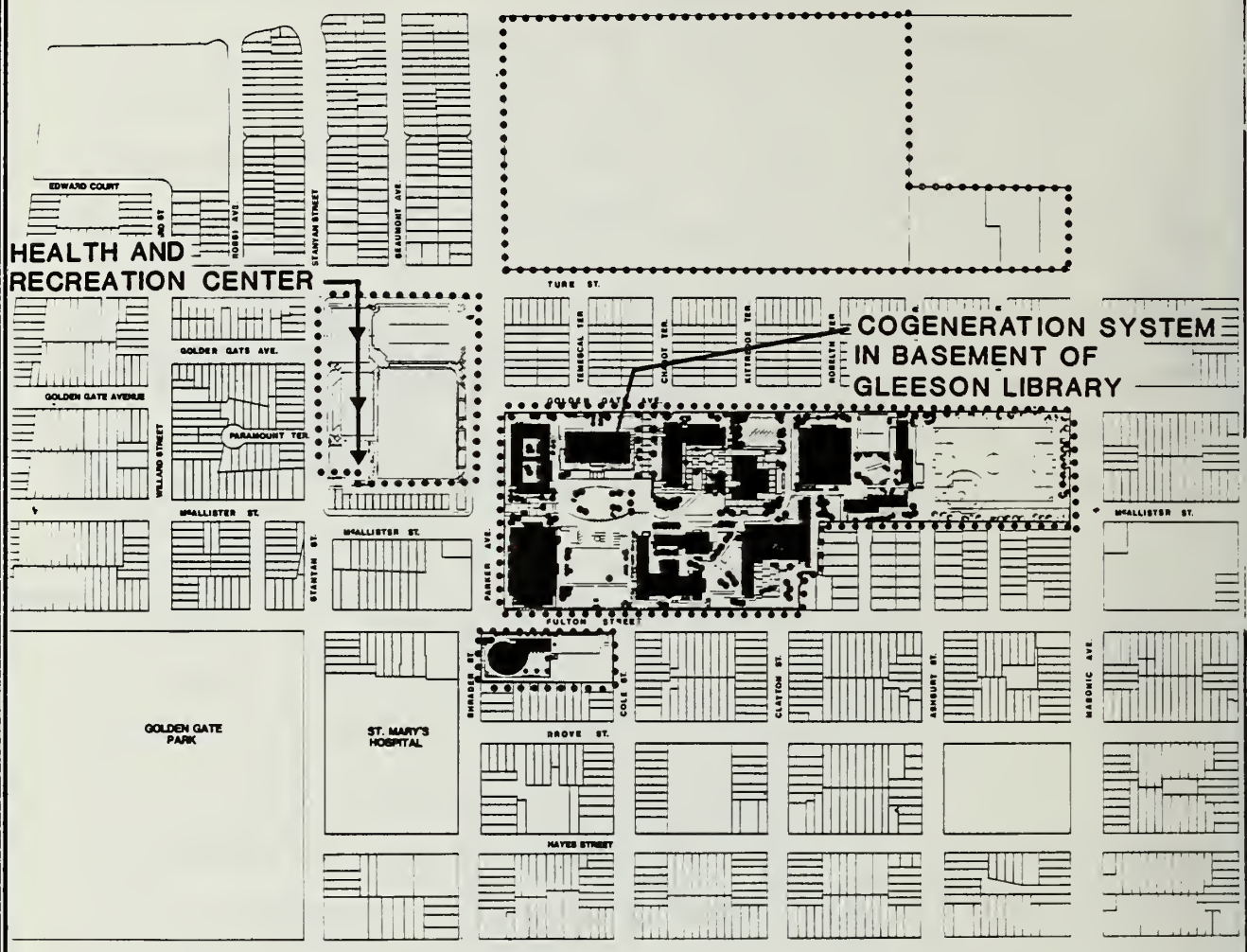


FIGURE 2

SCALE: 1"=500'

SITE LOCATIONS

..... University of San Francisco Boundary

↑ N

USF HEALTH AND RECREATION CENTER
and COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

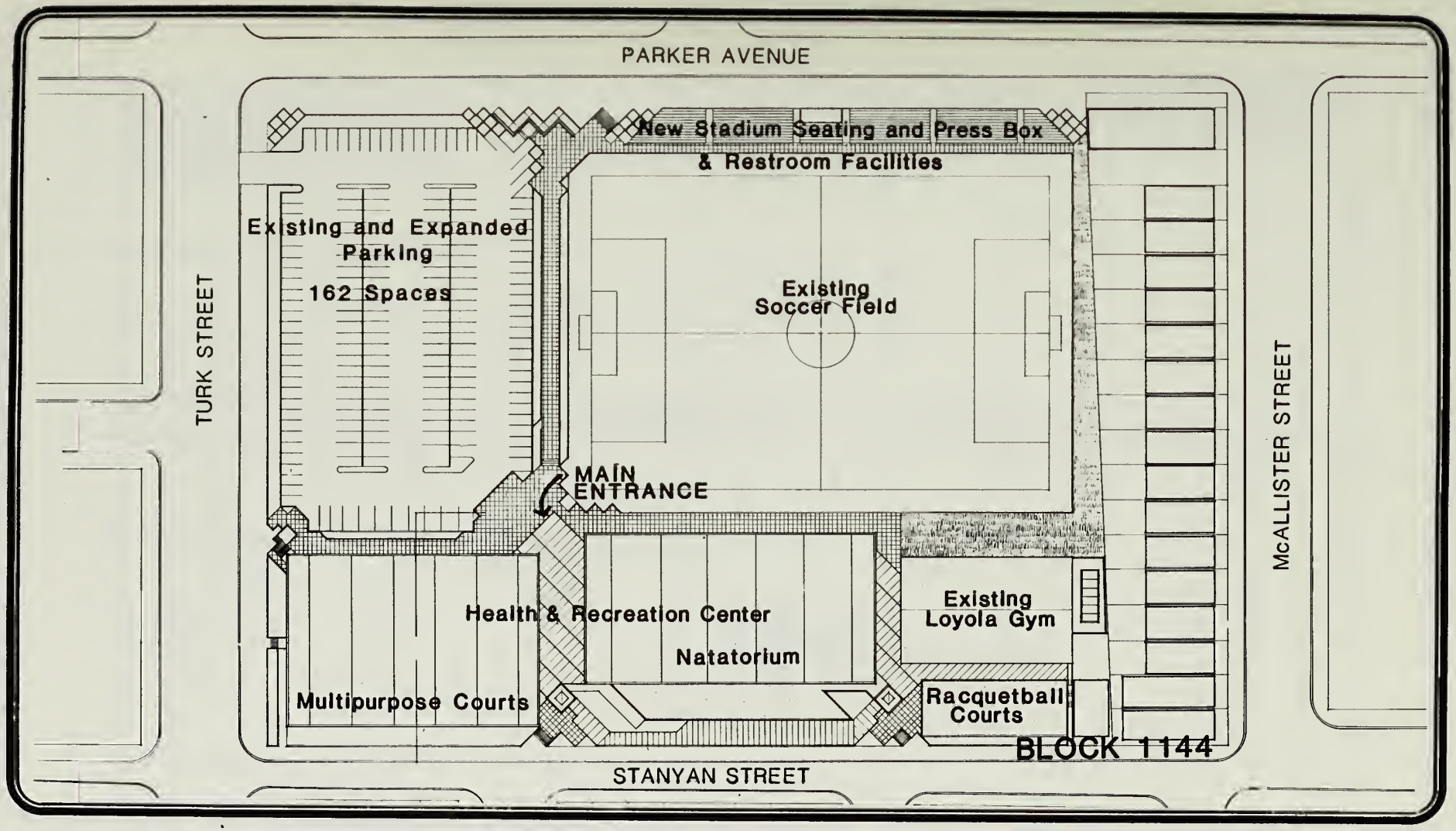


FIGURE 3

PROJECT LOCATION
USF HEALTH AND RECREATION CENTER

Scale: 1" 100'

← N

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

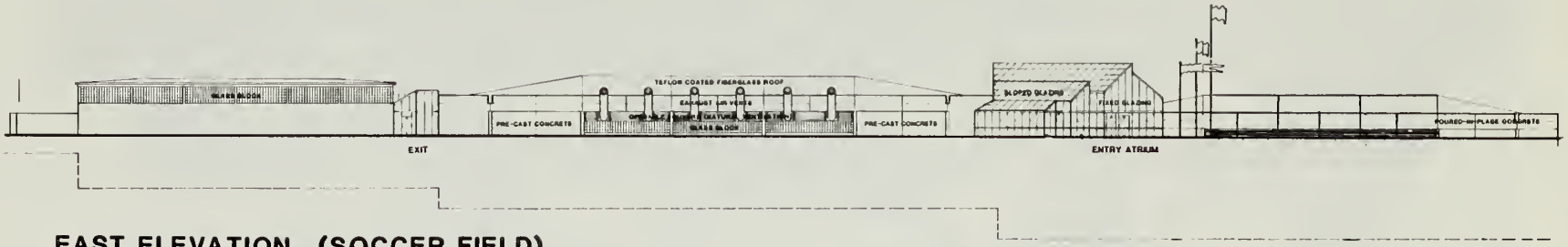
Turk St. The Negoesco Soccer Field would be shifted approximately 10 ft. to the west, but would maintain its present dimensions (about 330 ft. long x 230 ft. wide). Existing spectator stands would be moved from the west side of the field and placed against the eastern hillside along Parker Ave. A press box (25 ft. long x 10 ft. wide x 10 ft. tall) and public restrooms would be incorporated into the new seating. The Health and Recreation Center would be made available for use to University students, faculty, staff, alumni and local residents (hours of use subject to limitation by the University).

The Health and Recreation Center project plans include demolition of the existing 91,000 sq. ft. Loyola Hall and partial demolition and rehabilitation of the existing Loyola Gym (12,400 sq. ft.). The Health and Recreation Center project would consist of one building with four components, totaling approximately 118,800 gross sq. ft., or 26,400 sq. ft. of net new space:

(1)	Loyola Gymnasium	12,400 sq. ft.	175 ft.	x	85 ft.
(2)	Racquetball Courts	5,500 sq. ft.	106 ft.	x	52 ft.
(3)	Natatorium	57,100 sq. ft.	207 ft.	x	104 ft.
(4)	Multi-Purpose Courts	43,200 sq. ft.	180 ft.	x	120 ft.
(5)	Circulation	600 sq. ft.	-		-

The four units of the Recreation Center would be linked together by glass atria and walkways that would interconnect the three building levels (see Figures 4 and 5, pp. 17 and 18). The glass enclosed passages would provide passive solar heating in the Recreation Center, reducing the amount of steam needed for space heating. The Center would be a maximum of 40 ft. tall as measured at the midpoint of the building along Stanyan St. Viewed in cross section, the highest point of the Recreation Center would be about 20 ft. higher than Parker Ave.

WEST ELEVATION (STANYAN ST.)



EAST ELEVATION (SOCCER FIELD)

NORTH ELEVATION (TURK ST.)

FIGURE 4

PROJECT ELEVATIONS

USF HEALTH AND RECREATION CENTER

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects

Scale: 1" = 64'

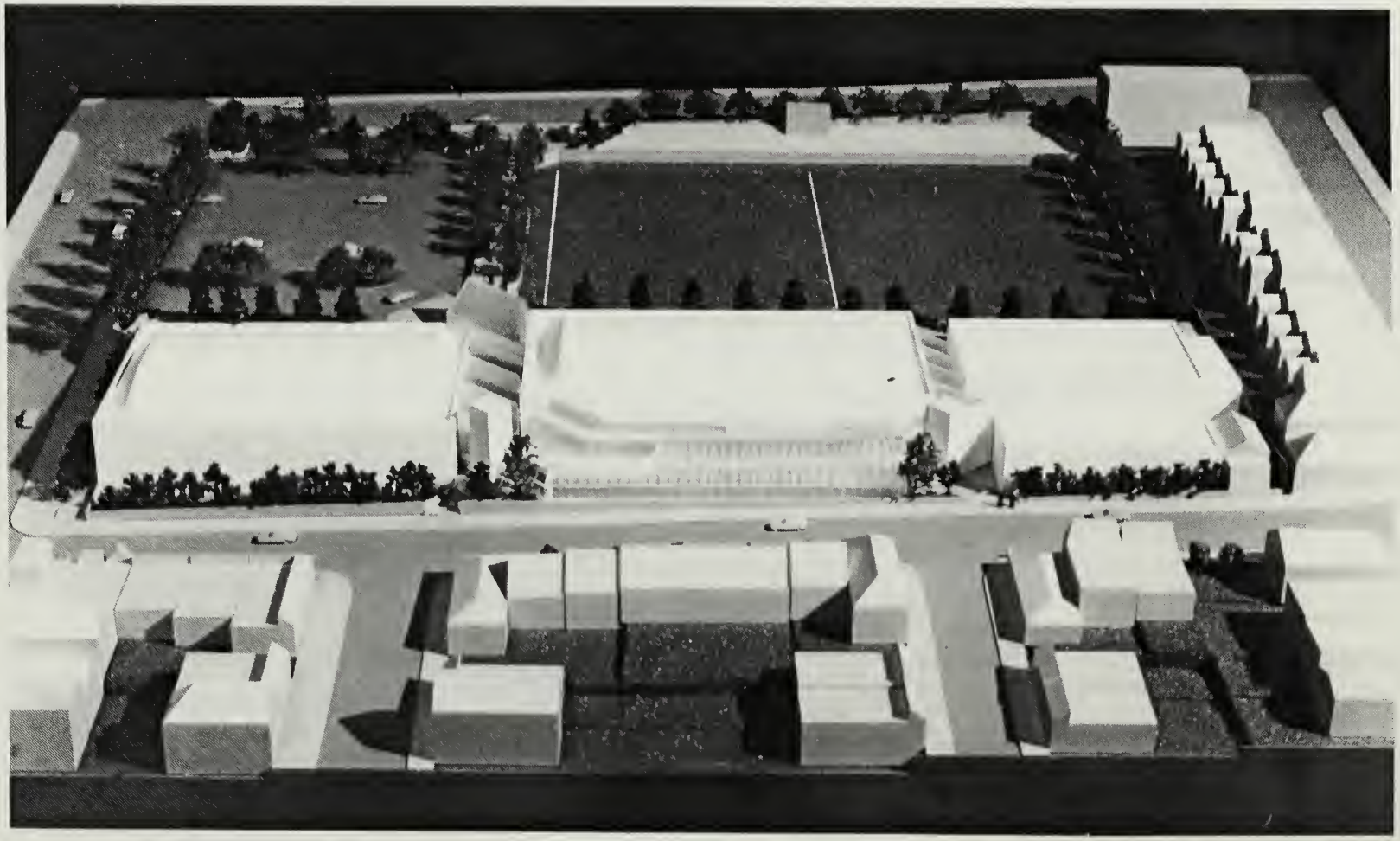


FIGURE 5

MODEL PHOTO

USF HEALTH AND RECREATION CENTER

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects

Approximately 11,000 sq. ft. of Loyola Gym (about 88% of the original struc- would be rehabilitated. Functionally, the Gym would remain the same except for the removal of 600 spectator seats. The existing Gym lobby would be removed and replaced by a new lobby integrating the Gymnasium with the rest of the Recreation Center. Adjacent to the west side of Loyola Gym would be a 5,500 sq. ft. Racquetball Building housing five courts and a teaching/ observation gallery. The courts would be used for racquetball, handball and squash. This building would be approximately 24 ft. high and set back 4 ft. from the Stanyan St. sidewalk.

A Natatorium (approximately 57,100 sq. ft.) would be constructed adjacent to the north side of Loyola Gym and would contain a 55 yard (50 meter) x 25 yard swimming pool and seating for 200 spectators (see Figure 3, p.15). An Alumni Club and University Club, a common kitchen to serve them, and a sundeck would also be included in this structure. The Natatorium would be constructed of concrete with a fiberglass roof rising to a height of 40 ft. above Stanyan St. A glass enclosed galleria serving as a circulation corridor for the Natatorium would front along Stanyan St. forming the facade of this component of the Recreation Center. The galleria, running alongside the pool unit would be set back 10 ft. from Stanyan St.

The fourth unit in the Center would be a 43,200 sq. ft. Multi-Purpose Court Building, located north of and connected to the Natatorium (see Figure 3, p. 15). This building would have a basement of about 21,600 sq. ft. for storage and mechanical space along with rooms for activities such as dance/ fitness, weight lifting, combative sports, and class meetings. The main floor of the building would contain three full-size activity courts that would permit three or more activities to occur simultaneously. A 1/10 mile

running track, approximately 8 ft. wide, cantilevered out from the wall, would be located 22 ft. above the court floor. The building would be 33 ft. high and constructed similarly to the proposed Natatorium. The Multi-Purpose Court Building would be set back 37 ft. from Stanyan St. and 12 ft. from Turk St. (measured from the inside edge of the sidewalk).

Extending from the east side of the Multi-Purpose Court Building along Turk St. to Parker Ave. would be a 172-space parking lot consolidating the three parking lots that currently exist on the site. The entrance to the parking lot would be on Turk St. (see Figure 3, p. 15).

Access to the Recreation Center would be provided by an atrium entry on the east side of the Center at the third floor (parking lot) level between the Multi-Purpose and Natatorium buildings (see Figure 3, p. 15). No routine access would be available from Stanyan St. The main entrance to the Recreation Center would also be used as a delivery entrance. There would be no parking, loading, or service areas along Stanyan St. or Parker Ave.

The building setbacks along Stanyan St. would be used for landscaping and open space. New landscaping would also be placed along Parker Ave., Turk St., and along the proposed walkway between the soccer field and the parking lot (see Figure 6, p. 21). All outside utility lines servicing the Health and Recreation Center would be brought to the project site from Stanyan and Turk Sts.

Cogeneration

Cogeneration is the consecutive production of electric or mechanical energy and useful thermal (heat) energy from a single fuel. Cogeneration systems use otherwise wasted thermal energy for applications such as space or water

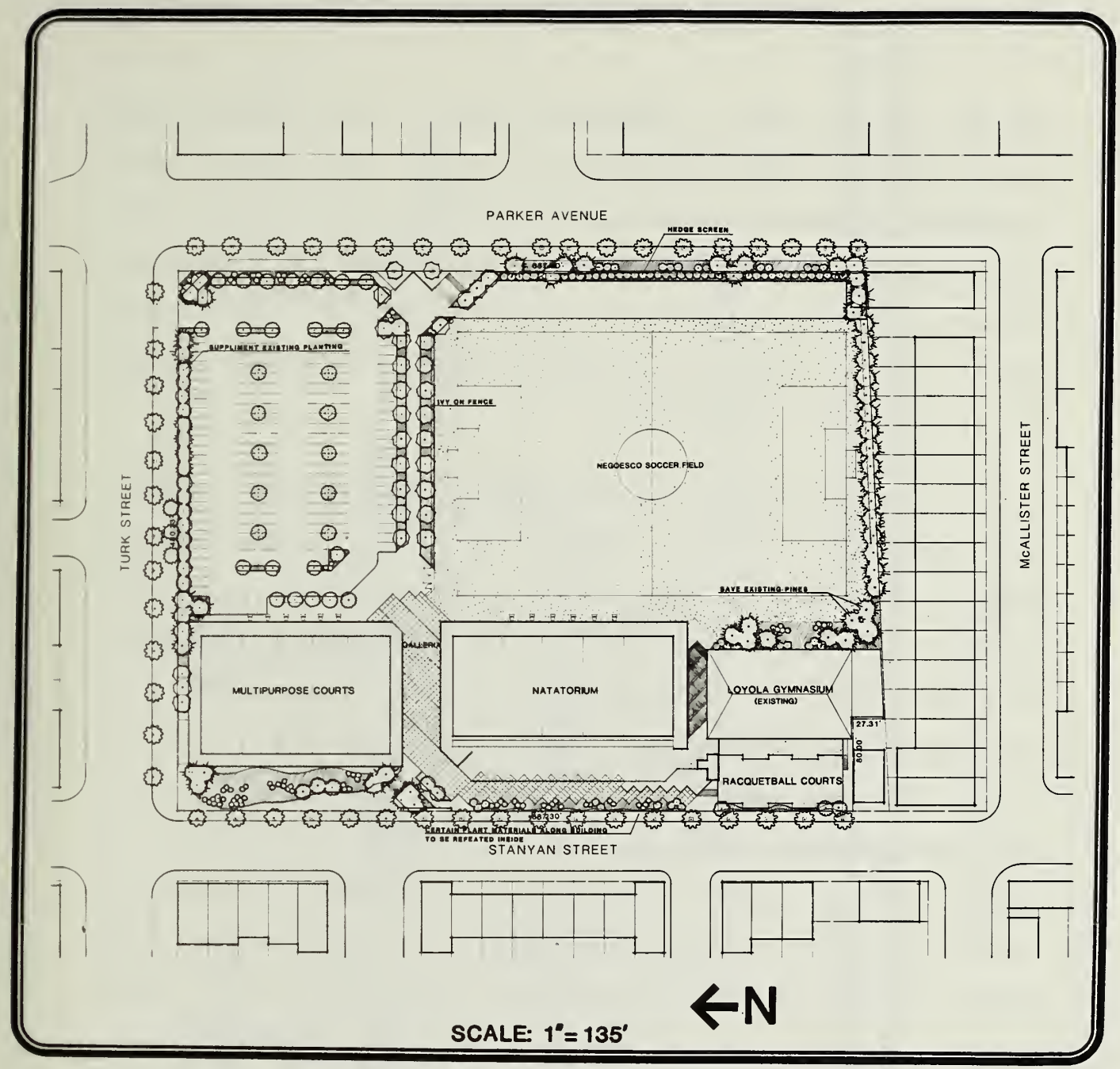


FIGURE 6

LANDSCAPE PLAN

USF HEALTH AND RECREATION CENTER

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects

PLANTING LEGEND

- STREET TREE
- LARGE SCREEN AND ACCENT TREES
- MEDIUM AND SMALL SCREEN TREES
- LARGE SCREEN AND ACCENT SHRUBS
- SMALL SHRUBS AND GROUND COVER

heating. For this reason, a cogeneration system is more energy-efficient than a typical gas-fired power plant or a standard steam heating system. The proposed Cogeneration System would use natural gas to cogenerate electricity and steam. This energy-conserving system would partially replace the natural gas fueled boiler plant currently in use at USF. (The two boilers that would be replaced are approximately 25 years old and are scheduled for replacement in the near future.)

For the proposed Cogeneration System to operate cost effectively, the University must have a demand for steam. If USF were to run the electrical generator at a time of no steam demand, venting exhaust heat to the environment without benefit of heat recovery, the system would not be economical. However, if steam is cogenerated with power, a cost savings would occur because the University would save the cost of purchasing natural gas to heat a separate steam-generating boiler plant (see Figure 7, p. 23). Electrical power would be purchased directly from PG&E during periods when USF does not require steam. Initially, the Cogeneration System would be in use an average of 16 hrs./day, 365 days/year. As the University's steam demands increase, the facility could be in operation up to 24 hrs./day.

Cogeneration System

The proposed Cogeneration System would be entirely contained within the existing boiler plant building except for a heat radiator unit measuring 11 ft. x 9 ft. x 8 ft. that would be placed atop the Gleeson Library roof to discharge excess heat from the Cogeneration System. An exhaust stack would be contained within the existing steam plant stack located adjacent to the building (see Figures 8 and 9, pp. 24-25).

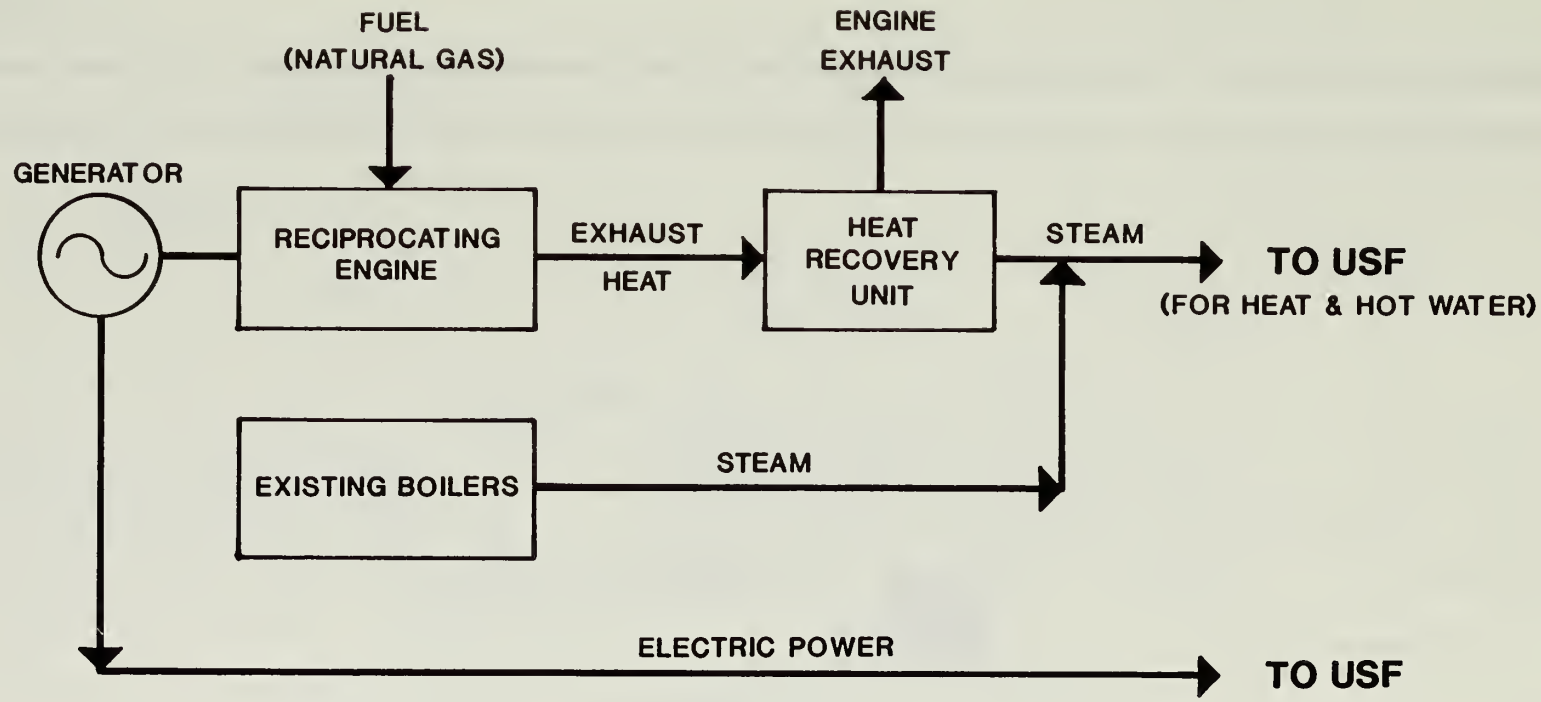


FIGURE 7

FLOW DIAGRAM USF COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

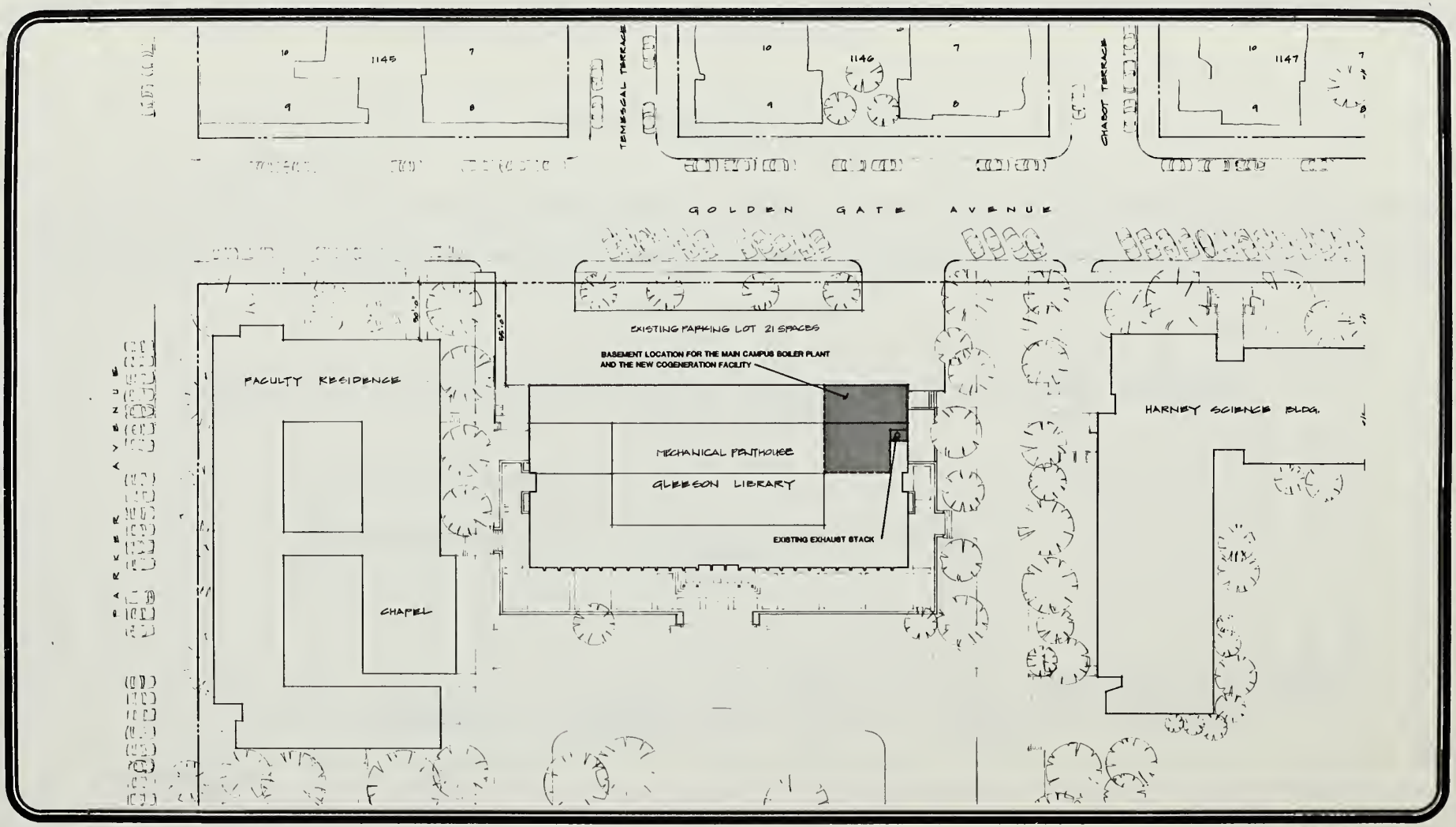


FIGURE 8

PROJECT SITE PLAN

USF COGENERATION SYSTEM

Source: Bendix Environmental Research, Inc. and Pflueger Architects

SCALE: 1"=80'

PROJECT SITE

PROPERTY LINE

N

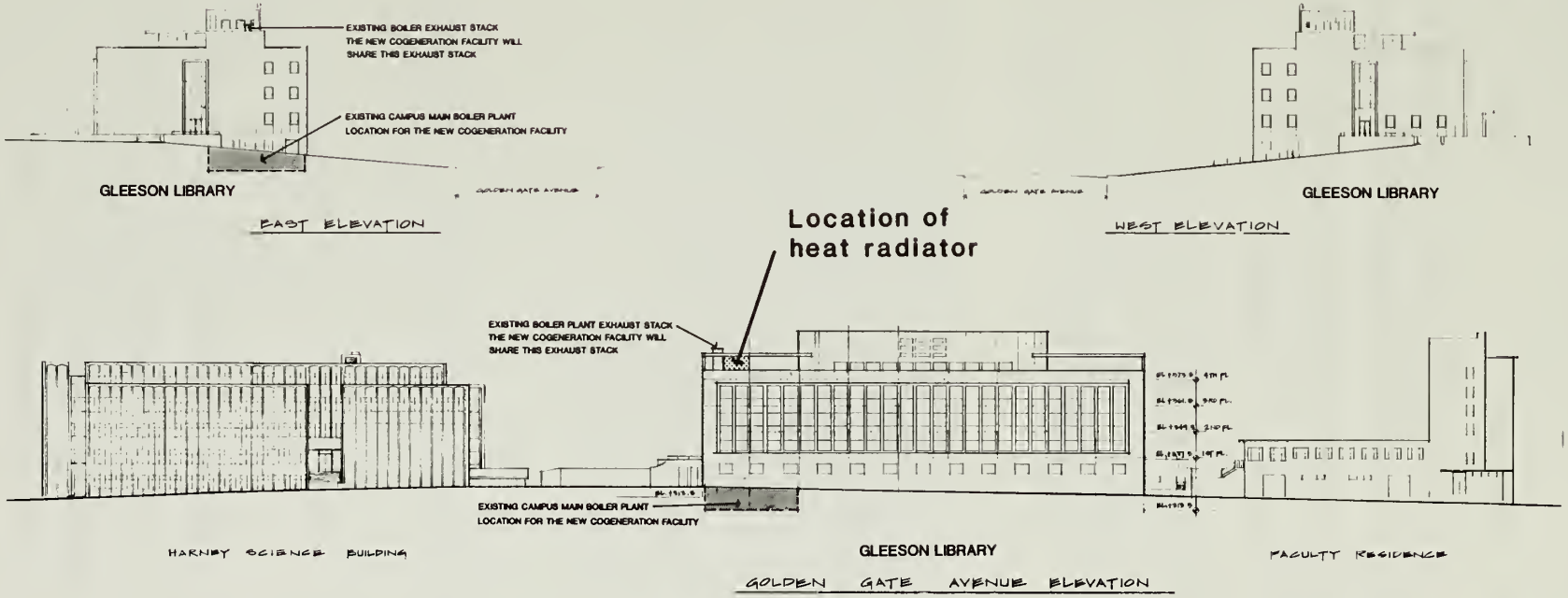


FIGURE 9

PROJECT ELEVATIONS

USF COGENERATION SYSTEM

SCALE: 1" 80'

PROPOSED PROJECT LOCATION

Source: Bendix Environmental Research, Inc. and Pflueger Architects

Natural gas would be burned in a low revolution engine to produce electricity and exhaust. Engine exhaust would in turn be routed to a heat exchange unit to produce 35-50 psi[1] steam (approximate capacity of 6,700 lb./hr.). This steam would be distributed throughout the campus for heating. Residual exhaust would then pass through a hospital-grade muffler and out into the environment through an existing exhaust stack.

Utility lines for the proposed Cogeneration System are in place and currently serve the existing steam plant under Gleeson Library. If necessary, a new gas line to serve the Cogeneration System would be brought in from a main line beneath Golden Gate Ave.

The Cogeneration System equipment would include a single 16 cylinder, natural gas fired, lean-burning engine such as a Cooper "Superior" model 165GTA, a waste heat boiler,[2] air intake vents, one exhaust stack, a heat radiator[3] and boiler feed water systems.[4] Ancillary equipment required by the Cogeneration System would include new non-PCB-containing transformers to replace the existing PCB-containing ones on campus.

Electricity

The proposed facility would have a maximum capacity of 1,875 kilowatts (1.9mW),[5,6] and produce a net average of 1,770 kilowatts (1.8 mW) of electricity. This electricity would be fed directly into the University electrical distribution system supplying the campus buildings with power. Based on projected steam demand for the University, the Cogeneration System would produce an excess of electricity in the amount of approximately 5-10% of the total electrical demand. This excess power would be sold to PG&E. Electrical power would be purchased from PG&E when the Cogeneration System was not operating.

Steam

Most buildings on the USF campus are connected to the existing steam distribution system and would require little or no modification as a result of the system proposal (see Figure 10, p. 28). New steam lines would connect the University Center, Hayes-Healy Hall, Gilson Hall, and Kendrick Hall to the steam distribution grid as well as the Health and Recreation Center site. Should the Cogeneration System require prolonged maintenance, heat would be provided by the two remaining old boilers which would be maintained on 'standby status'.

The Lone Mountain campus buildings are not attached to the USF campus central boiler plant and would not be included in the Cogeneration steam distribution system because of uncertainty about long-range uses of the buildings and their distance from the main campus. The long run of pipe required to cover this distance would result in excessive heat loss. Furthermore, much of the Lone Mountain campus is heated with hot water from separate boilers scattered around the Lone Mountain campus; an interconnection between the proposed Cogeneration System and these buildings would require the construction of a relatively large and costly central hot water storage tank.

D. Project Approvals

Following certification of the Final Environmental Impact Report, a Conditional Use Permit (CU) for each project would be considered by the Planning Commission. Subject to CU approvals, building permits would be issued for each project. Permits for the Cogeneration System would be required from the Federal Energy Regulatory Commission (FERC), the California Public Uti-

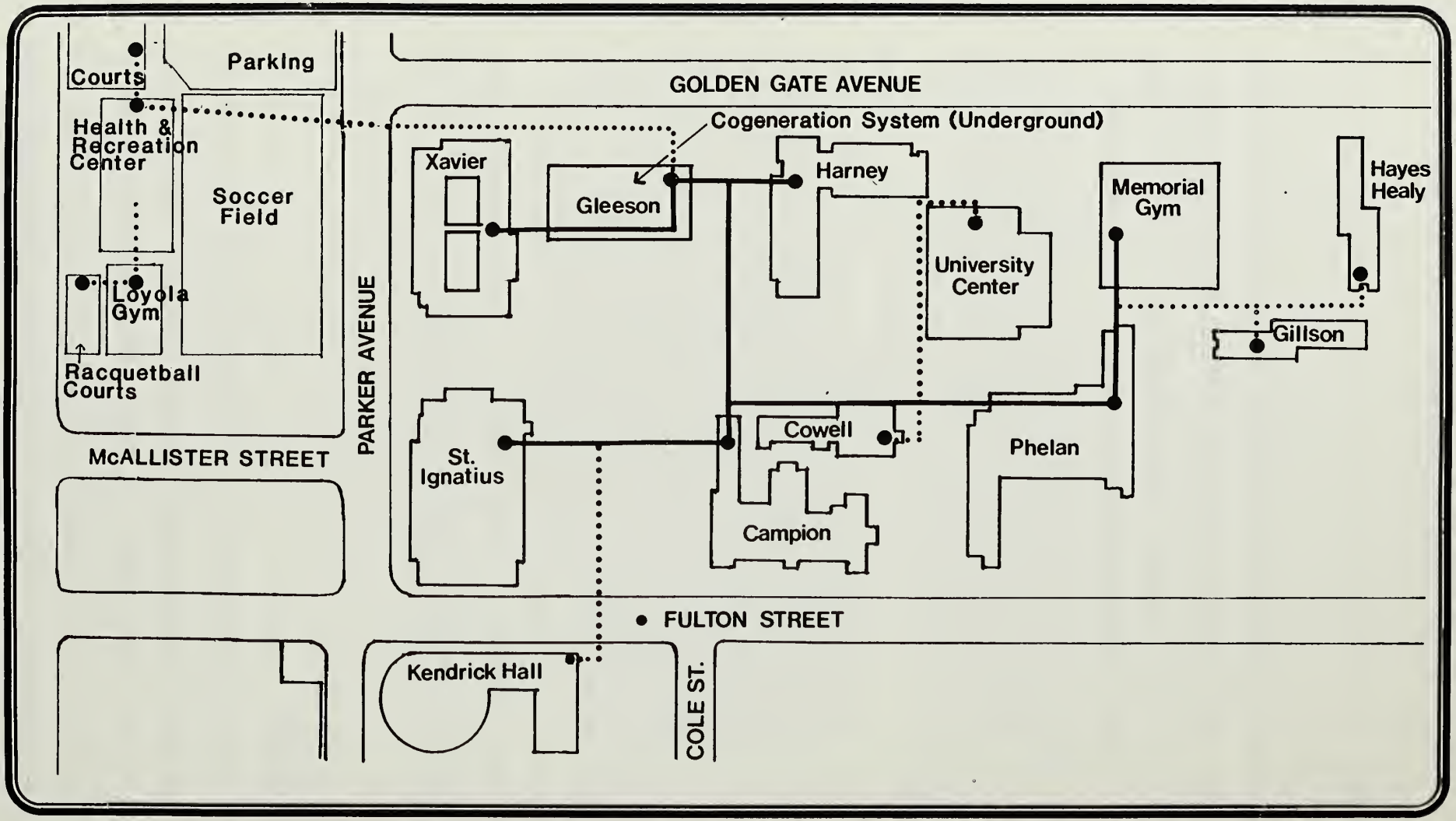


FIGURE 10

STEAM DISTRIBUTION SYSTEM

USF HEALTH AND RECREATION CENTER and COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

N

SCALE: 1"=200'
Buildings to scale
Piping Schematic

Steam Piping

Existing

New

NOTE: Condensate return lines not shown.

lities Commission (CPUC), and the Bay Area Air Quality Management District (BAAQMD).

The FERC and CPUC promulgate and enforce the federal Public Utilities Regulatory Policies Act of 1978 (PURPA). PURPA requires electric utilities to purchase electricity from and sell electricity to qualifying cogeneration facilities at rates determined by the FERC and the CPUC. The FERC and CPUC permits would certify the Cogeneration System as qualifying under PURPA for avoided cost power sales revenue.[7] The FERC Permit for the proposed Cogeneration System has not yet been applied for but will take approximately six weeks to receive. An application for the CPUC Permit has not yet been filed.

An Authority to Construct and a Permit to Operate would be obtained from the BAAQMD. A New Source Review would be required due to projected emissions of nitrogen oxides (NO_x) exceeding 150 lbs./day. The project would emit about 280 lbs./day of NO_x (see Table 3, p. 61). No offsets[8] are expected to be required. Best Available Control Technology (BACT)[9] would be required for NO_x only and would be implemented. Prevention of Significant Deterioration (PSD)[10] requirements would not apply to the Cogeneration System, as the facility would not emit over 25 tons/year total suspended particulates (TSP) or 40 tons/year sulfur dioxide (SO_2) (see Table 3, p. 61).

Project Schedule and Costs

Health & Recreation Center Construction Schedule

Site Clearance (after building permit)	3 Months
Excavation and Foundation	3 Months
Building Construction Completed	12 Months
	18 Months

Cogeneration System Construction Schedule

Removal of two boilers and preparation of basement site	4 months
Installation and hook-up of Cogeneration machinery	6 months
	10 months

Total construction time, including installation of equipment and connections of the Cogeneration System to PG&E and campus buildings, would be about 18 months.

Approximate Health and Recreation Center Costs

Construction and Equipment	$ 10,000,000
Engineering and Permits	1,000,000
Contingency and Escalation	1,000,000
Project cost	$ 12,000,000
Endowment for operation	3,000,000
Total cost in 1984	$ 15,000,000

Approximate Cogeneration System Costs

Equipment - total installed cost	$ 1,500,000
Engineering supervision and construction	600,000
Contingency	400,000
Total capital cost in 1984	$ 2,500,000
Escalation (6.4%)	160,000
Total capital cost in 1985	$ 2,700,000
Total capital cost in 1986	$ 2,900,000

NOTES - Project Description

1. psi = pounds per square inch.

2. waste heat boiler = a boiler that uses waste heat to produce steam.

3. heat radiator = fan unit used to cool discharge heat generated in the engine jacket, similar to an automobile radiator.

4. boiler feedwater = water supplied to the steam-generating unit.

5. kilowatt (kW) = one thousand watts. Watt = the basic unit of electric power, equal to about 1/750 of one horsepower.

6. megawatt (mW) = one million watts = one thousand kilowatts.

7. See Energy Impacts, pp. 55-59.

8. offset = reduction in air emissions at one location in the air district as a condition of permit allowing new emissions at another location in the district.

9. BACT = (covers regions that are non-attainment areas only) air pollution control technology defined as the more stringent of the most effective emission control technique which has been achieved in practice for more than one year or any other emission control technique found by the Air Pollution Control Officer to be technologically feasible and cost effective.

10. PSD = air pollution regulations (governed by the EPA) in attainment areas. Control measures are the same as those defined for BACT.

CHAPTER III. ENVIRONMENTAL SETTING

A. Energy

USF's total energy use in 1982 was 9,129,000 kWh of electricity and 988,000 therms[1] of natural gas, at a cost to the University of $1.34 million (see Table 1, p. 33). This represented about 32% of the University's operating costs for the year.[2]

Heating for campus facilities is provided by the University's 25 year old central steam plant and individual building boilers. The central steam plant, located under Gleeson Library, serves seven campus buildings: Campion Hall, Gleeson Library, Harney Science Center, Memorial Gymnasium, Phelan Hall, St. Ignatius Church and Xavier Hall (see Figure 10, p. 28). Service to these facilities is provided by steam at 30 psi through an underground district heating system. Both Loyola Gym and Loyola Hall have heating systems separate from the central campus boiler system. Loyola Gym contains a gas fired boiler (17 therms/hr.) for water and space heating. Loyola Hall has a 15 therms/hr. boiler generating 4-6 psi of steam for radiator space heating. All campus heating systems use natural gas fuel; some are equipped to use diesel or fuel oil as standby fuels.

Because of increased energy costs in recent years, USF asked PG&E to perform an energy use audit in 1979. Such studies, under PG&E's Energy Management Survey Program, evaluate current energy use and recommend a program of low-cost modifications to assist the customer in reducing energy costs.

Table 1: USF 1982 Energy Use and Costs

Month	Excluding Lone Mountain					Total Campus					
	Gas		Electricity		Total	Gas		Electricity		Non-tax Total	Total
	Therms[1]	Cost[2]	kWh[1]	Cost[2]	Cost[2]	Therms[1]	Cost[2]	kWh[1]	Cost[2]	Cost[2]	Cost[3]
January	71	34	592	49	83	98	47	686	57	104	112
February	80	40	701	61	101	103	51	786	69	120	136
March	71	35	745	63	98	93	46	830	71	117	128
April	71	35	715	61	96	92	46	799	68	114	124
May	62	33	684	55	88	83	45	763	61	106	114
June	52	29	629	47	76	69	39	700	53	92	104
July	49	27	607	46	73	69	39	683	52	91	94
August	49	28	599	45	73	64	37	678	51	88	96
September	44	24	691	51	75	60	33	780	57	90	96
October	47	26	678	48	74	68	38	775	55	93	97
November	57	32	728	50	82	84	47	831	58	105	109
December	79	44	746	51	95	105	58	818	56	114	128
TOTAL	732	387	8,115	627	1,014	988	526	9,129	708	1,234	1,338
Monthly Average	61	32	676	52	85	82	44	761	59	103	112

1 All values in thousands.
2. All values in thousands of dollars; taxes and surcharges not included.
3. All values in thousands of dollars; taxes and surcharges included.

Source: USF and Bendix Environmental Research, Inc.

As a result of this audit, equipment modifications were implemented throughout the USF campus. These include more economical lightbulbs,[3] sonic light switches,[4] rezoning of lighting systems,[5] retrofitting of windows with triple glazed glass, and reroofing of facilities with polyurethane foam insulating systems.[6] Concurrently, USF students undertook an "Energy Awareness" campaign involving activities aimed at increased campus understanding of energy conservation methods and issues.

While these low-cost measures achieved a reduction in energy consumption of 15-20%, increases in energy costs nearly cancelled out the expected dollar savings. Consequently, USF now has a program of higher-cost modifications with the goal of higher energy efficiency and reduced energy costs.[2]

The first phase of the higher-cost program (mid-1983) was the installation of 8,000 sq. ft. of solar collectors on the roofs of three residence halls, one of the largest solar installations in San Francisco. This system has reduced USF's natural gas use for domestic hot water needs by approximately 55% at each residence hall.[7]

The second phase of higher-cost modifications to USF's energy system would be the proposed Cogeneration System.

NOTES - Energy

1. therm = 100,000 BTU; BTU (British thermal unit) = a standard for measuring heat, about equal to that from burning a standard kitchen match. Technically, it is the amount of heat required to raise the temperature of one pound of water 1° Fahrenheit (251,68 calories) at sea level.

2. Harold Hansen, Chief Engineer, USF, telephone conservation, October 7, 1983. Operating costs are comprised of scholarships, salaries, building and grounds maintenance, endowments, etc.

3. Lightbulb changes include 10,000 flourescent tubes changed from 40 watt to 34 watt; 600 fixtures changed from incandescent to fluorescent; 3,000 fluorescent tubes eliminated; and 60 outside fixtures changed

from 150 watt incandescent to 35 watt high pressure sodium. Per Harold Hansen, Chief Engineer, USF Plant Services, written communication, October 20, 1983.

4. Movement-activated sonic switches turn lights on when someone enters a room and switches them off after the last person leaves.

5. The lights in some rooms have been wired to time clocks. These measures have resulted in a 50% reduction in daytime lighting in dormitories.

6. New USF campus buildings will be constructed incorporating state-of-the-art wall and roof insulation. Kendrick Hall Addition, the most recent campus building, has already been constructed in this manner.

7. Conversation with Alan Pryor, Calfiornia Energy Investment Corporation, November 26, 1984. Estimate of consumption decrease is based on approximate natural gas consumption per student and known energy production of solar panels.

B. Air Quality

The project site is within the nine-county San Francisco Bay Area Air Basin which is designated by the California Air Resources Board (CARB) as a non-attainment area[1] for ozone and carbon monoxide (CO).[2] The City and County of San Francisco is now an attainment area[1] for total suspended particulates (TSP).[2] As required by the Federal Clean Air Act Amendments of 1977, a regional Air Quality Plan has been adopted which establishes control strategies to attain and maintain various standards by 1987.[3] These strategies include stationary and mobile source emission controls and transportation improvements to be implemented by the Bay Area Air Quality Management District (BAAQMD), Metropolitan Transportation Commission (MTC), and the CARB.

The BAAQMD operates an air quality monitoring station at 939 Ellis St., approximately two miles east of the site. A three-year summary of the data collected and the corresponding ambient air quality standards are shown in Appendix B, p. A-23. These data show occasional excesses of the ozone, CO

and TSP standards.

Air pollutant concentrations in San Francisco, while exhibiting fluctuations due to variations in weather, have shown an overall improvement since 1969, despite increased population and industrial development.[4] San Francisco's air quality, in general, is the least degraded of all the developed portions of the Bay Area. Because of the prevailing westerly and northwesterly winds, San Francisco is more a generator of its own air quality problems (especially CO and TSP) and a contributor to those in other parts of the Bay Area (especially ozone) than a recipient of pollutants from elsewhere. CO and TSP concentrations reflect local emission sources; concentrations are highest at the source and decrease as the pollutants are dispersed by wind. In contrast, ozone is not directly emitted but is a secondary pollutant formed in the atmosphere by a complex series of photochemical reactions involving emitted hydrocarbons and nitrogen oxides. Ozone air pollution is thus a regional phenomenon because the precursor pollutants are carried downwind as the reaction process occurs.

NOTES - Air Quality

1. A nonattainment area is one in which the federal ambient air quality standard for a designated pollutant has been exceeded within the past two or three years. An attainment area is one in which the federal ambient air quality standard for a designated pollutant has not been exceeded within the past two or three years.

2. Sally Friedman, Planner, BAAQMD, June 1981,p. 35.

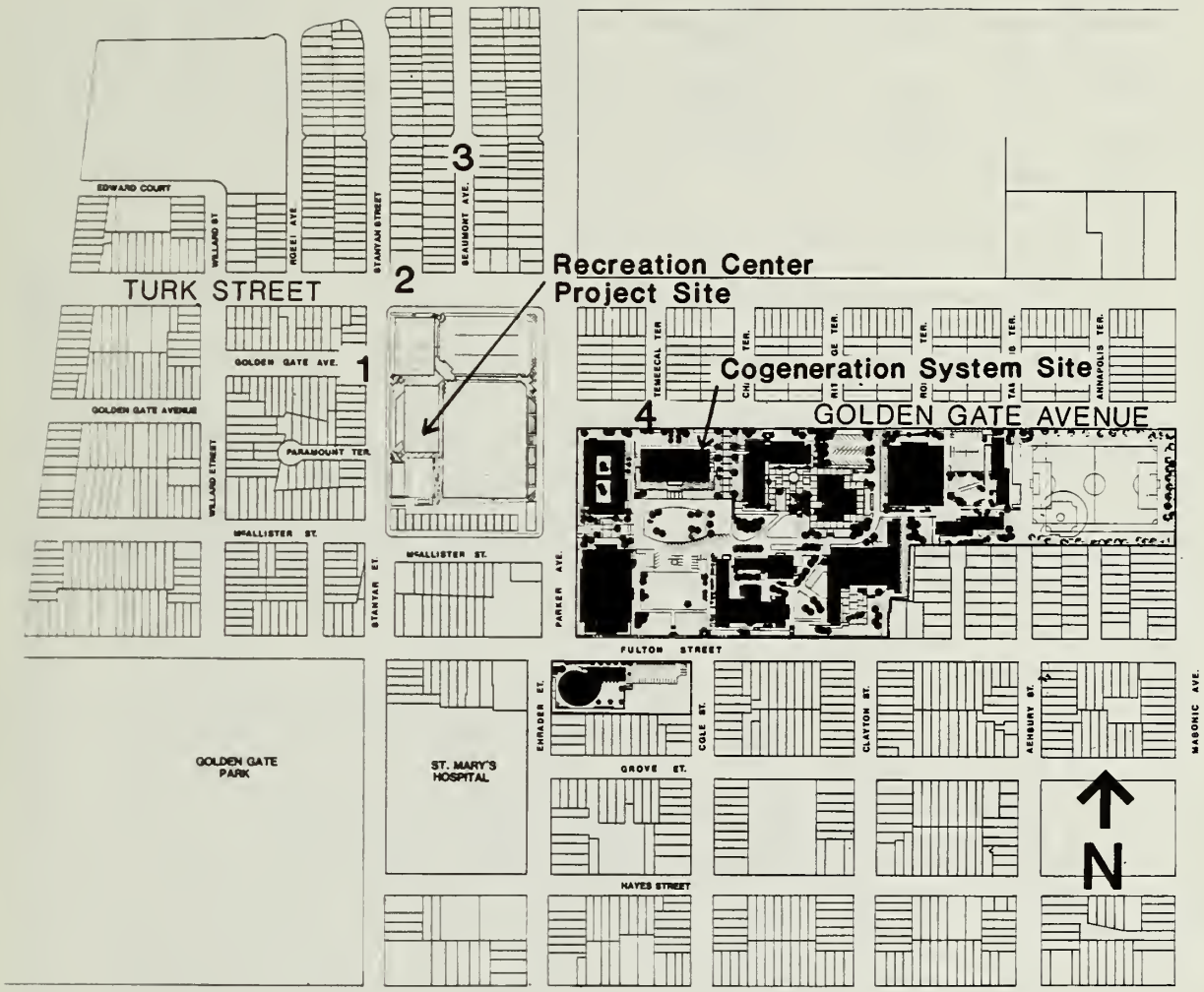
3. Association of Bay Area Governments (ABAG), BAAQMD, and Metropolitan Transportation Commission, 1982, Bay Area Air Quality Plan, December, 1982.

4. 1981-1982 Air Quality Handbook, BAAQMD, June 1981, p. 35.

C. Noise

The existing noise environment in the vicinity of the proposed Health and Recreation Center is dominated by traffic noise from Stanyan and Turk Sts. To determine existing sound levels in the vicinity of these homes, measurements were made at four locations over a two day period between a Wednesday morning and a Thursday afternoon[1] (see Figure 11, p. 38). Each of the four sites was visited twice and the measurements at each site were made during the morning and afternoon (see Table 2, p. 39). In addition to these spot measurements, a continuous 24-hour noise measurement was made at location number 3. The purpose of this noise measurement was to establish the background noise level during the evening and nighttime hours in this area. Data from the continuous measurement indicate that the background noise level, L_{90}, defined as the noise level equalled or exceeded 90% of the time, ranges from 38 to 47 dBA[2] between the hours of 10:00 PM and 7:00 AM. The quietest time of the night was between 4:00 AM and 5:00 AM, with an L_{90} of 38 dBA during this hour. During the daytime, the background sound level rises as the activity level increases. The highest background sound level of 47 dBA was during the daytime at measurement location 3.

The existing noise environment in the vicinity of the proposed Cogeneration System is dominated by traffic noise from Golden Gate Ave. and campus and neighborhood sounds. Measurements taken at the fourth location indicated in Figure 11, p. 38, reflect the existing noise environment of the residential development across Golden Gate Ave. from Gleeson Library. Nighttime background, or minimum moise levels of the Cogeneration System site area, fell within the same range as those measured in the vicinity of the Health and Recreation Center site. Daytime background noise levels range



SCALE: 1"= 600'

FIGURE 11

NOISE MEASUREMENT LOCATIONS (1-4)

USF HEALTH AND RECREATION CENTER
and COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects

Table 2: Noise Measurement Results*

Site No.	Location	Day and Time of Measurement	L_{eq}**	L_{10}***	L_{50}	L_{90}	Comment
1	On sidewalk of Stanyan between Golden Gate and Paramount across from USF	5/30/84 9:57 AM-10:15 AM	63	64	60	52	Truck 76-81 dBA
		5/31/84 2:55 PM-3:10 PM	66	70	64	55	
2	On sidewalk of Turk between Stanyan and Beaumont 30 ft. from center of near lane of Turk	5/30/84 10:20 AM-10:35 AM	67	69	63	58	Buses in each direction 74-82 dBA
		5/31/84 3:18 PM-3:35 PM	71	72	64	58	
3	On sidewalk at 172 Beaumont 250 ft. from center of near lane of Turk	5/30/84 10:45 AM-11:00 AM	58	61	54	46	Noise primarily from Turk St.
		5/31/84 3:37 PM-3:52 PM	58	60	54	48	
4	Adjacent to site of Cogeneration System on Golden Gate, 30 ft. from center of near lane	5/30/84 11:10 AM-11:25 AM	58	62	55	52	Motorcycle 68 dBA
		5/31/84 4:07 PM-4:22 PM	55	58	52	49	Students milling around

* See Figure 10, p. 36 for the locations where the measurements are taken. All measurements are in dBA.

** The L_{eq} is the equivalent steady state sound level which, in a stated period of time, has the same acoustic energy as the time-varying sound level during the same time period.

*** The sound level in dBA that was equaled or exceeded 10% of the time; L_{50} and L_{90} are the levels equaled or exceeded 50 and 90% of the time, respectively.

Source: Charles M. Salter Associates, Inc., and Bendix Environmental Research, Inc.

from 50-55 dBA, with sound levels exceeding this range 90% of the time. During the measurement survey, the existing boiler plant located beneath Gleeson Library was not audible across Golden Gate Ave. For a further explanation of noise levels and noise terminology see Appendix C, pp. A-24 to A-27.

NOTES - Noise

1. Measurements made by Charles Salter Associates, acoustical consultants, on May 30 and 31, 1984.

2. Decibel (dB) = A logarithmic unit of sound intensity. Sound waves traveling onward from a source exert a force known as sound pressure level (commonly called "sound level"), measured in decibels.
   dBA = Decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels.

D. Transportation, Circulation and Parking

The Health and Recreation Center project site is bounded on the west by Stanyan St., on the south by McAllister St., on the east by Parker Ave. and on the north by Turk St. All of these streets are two-lane, two-way, residential avenues with the exception of Turk St. which has two lanes in each direction for a total of four lanes.

The Cogeneration System site is located in the central campus area, which is bounded on the west by Parker Ave., on the south by Fulton St., on the east by Masonic Ave. and on the north by Golden Gate Ave. Fulton St. and Masonic Ave. have four lanes, two lanes in each direction. Golden Gate and Parker Aves. have two lanes, one lane in each direction.

Three parking lots are on the Health and Recreation Center site: 31 spaces fronting Stanyan St. near McAllister St., west of Loyola Gym; 49 spaces at the corner of Stanyan and Turk Sts., and 105 spaces at the corner of Turk

St. and Parker Ave. (see Figure 12, p. 42).

MUNI routes within 2000 ft. of the project sites are, in the east-west direction: 31 Balboa and 31BX Balboa express, boarded on Turk St.; 5 Fulton boarded on Fulton St., 21 Hayes, boarded on Fulton St. at Stanyan St.; and the 38 Geary and 38L, 38AX and 38BX (expresses), which are boarded on Geary St. The only north-south transit line in the site vicinity is the 43 Masonic, boarded on Masonic Ave. on the east side of campus. Lines 5, 31 and 38 operate 24 hours per day.

E. Land Use and Zoning

The proposed Health and Recreation Center site is located on Lots 1 and 1B in Assessor's Block 1144, which is bounded by McAllister St., Turk St., Stanyan St. and Parker Ave.. Parker Ave. separates the 307,000 sq. ft. Health and Recreation Center site from the remainder of the 19.5 acre USF campus. This site is currently occupied by Negoesco Soccer Field, Loyola Hall, Loyola Gym and three parking lots. (see Figure 12, p. 46).

The block has a natural slope of 20 ft. downhill from the McAllister St./Parker Ave corner to the Turk St./Stanyan St. corner. The block's topography has been rearranged, however, to provide flat surfaces (for the soccer field and other uses) and now consists of two levels on either side of a 22 ft. high retaining wall, which runs parallel to, and just east of, Loyola Hall. The upper level contains the existing soccer field area (130,000 sq. ft.) and the Turk St./Parker Ave. parking lot (38,000 sq. ft.). The lower level is about 137,000 sq. ft. and contains the two existing buildings and the two smaller parking lots. Loyola Gym (about 12,400 sq. ft.) is used primarily for intramural sport and recreational activities. Loyola

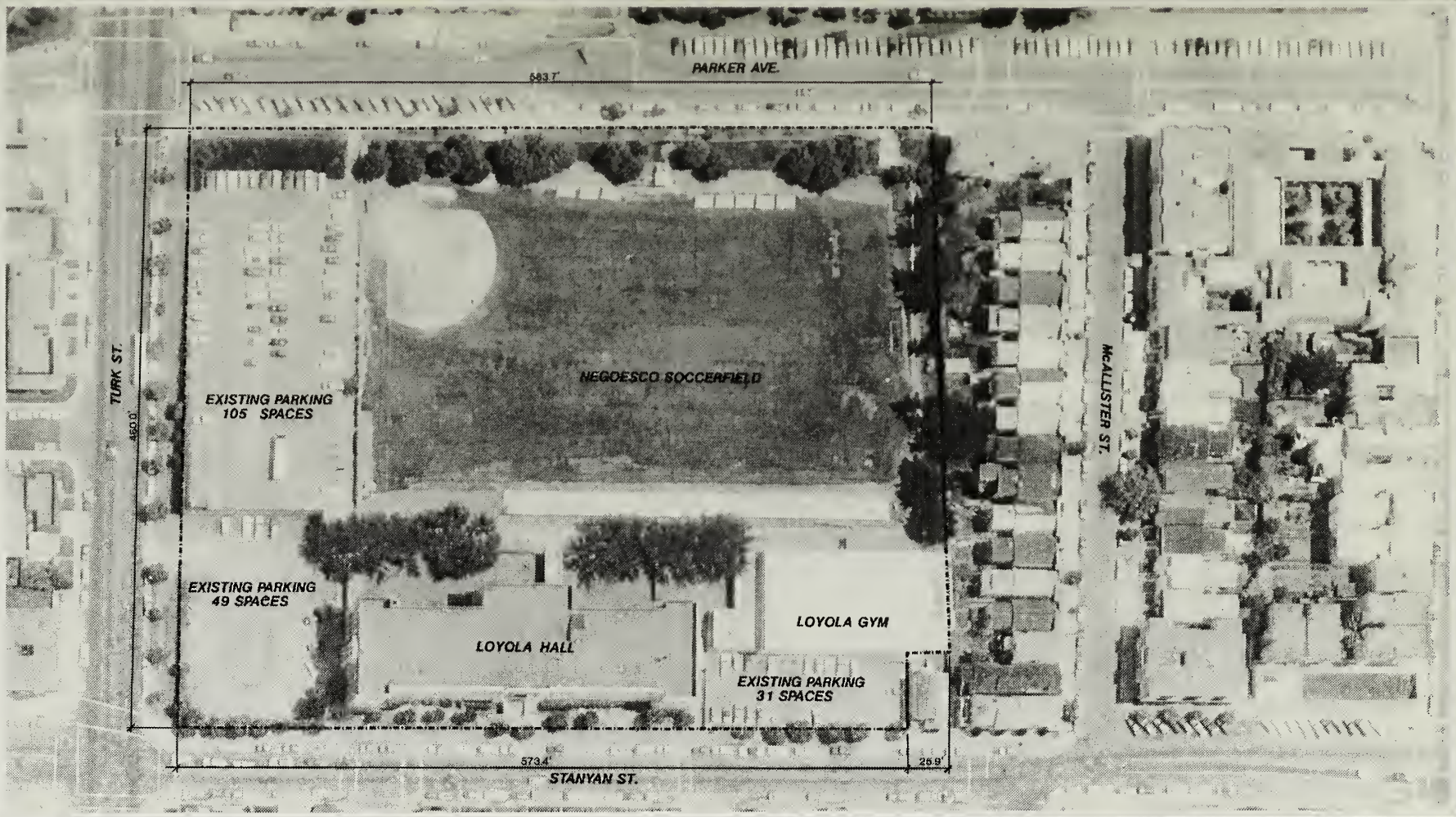


FIGURE 12

SITE PHOTO
USF HEALTH AND RECREATION CENTER

Source: Bendix Environmental Research, Inc. and Pflueger Architects

←N

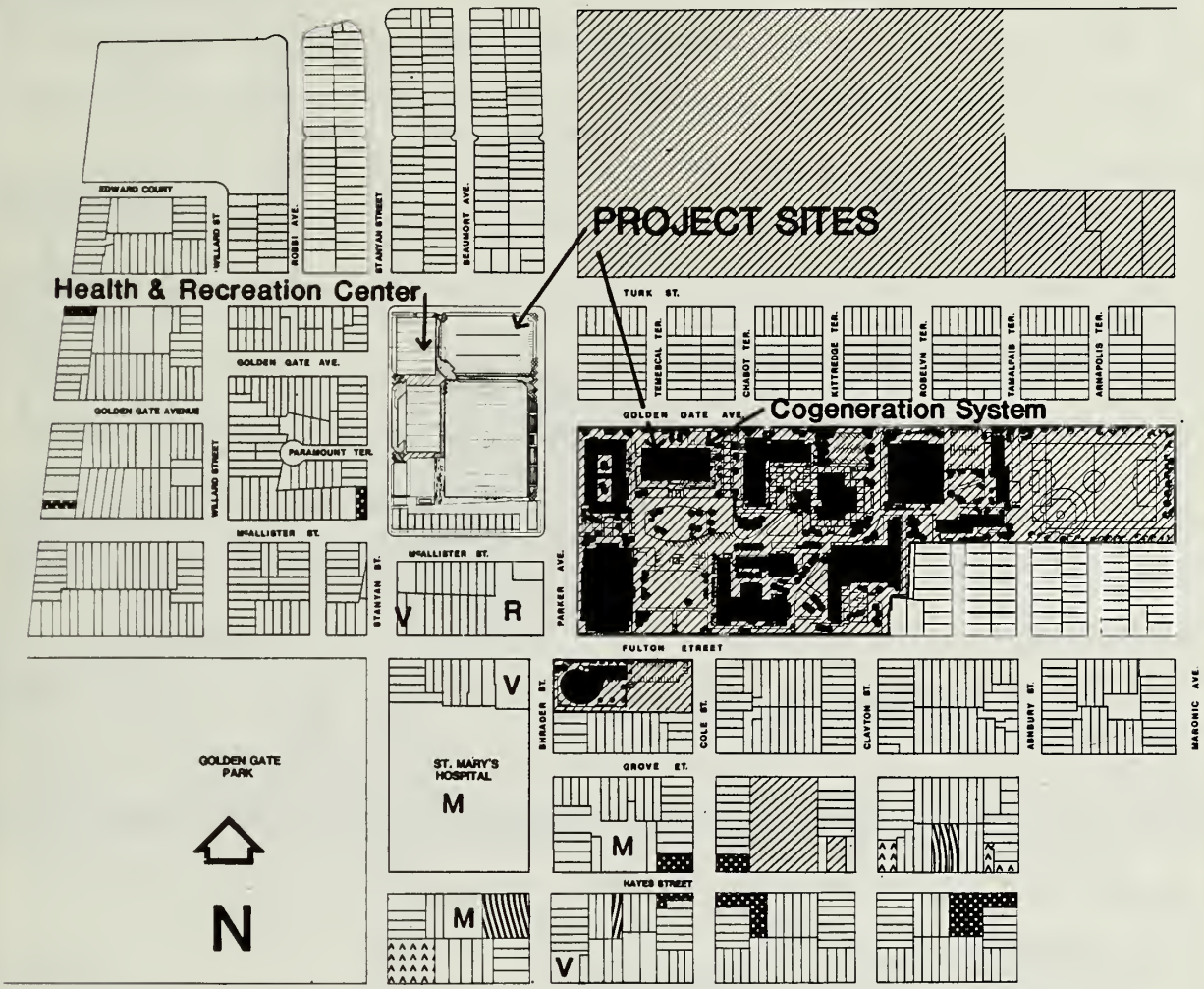
SCALE: 1"=120'

Hall contains 91,000 sq. ft. of classroom and office space. The two parking lots on this level occupy about 26,000 sq. ft..

Land uses surrounding the Health and Recreation Center site are predominantly residential. The four adjacent streets (Stanyan, Turk and McAllister Sts. and Parker Ave.) are lined by single family homes and multi-unit dwellings. The southern edge of the project block is lined with non-University-owned residences which front McAllister St. Their backyard areas and a 5 ft. wide pedestrian walkway separate these residences from the soccer field and the southern face of Loyola Gym. Xavier Hall, the University Jesuit residence, is across from the soccer field on the east side of Parker Ave. The Twilight Cafe/Deli on the corner of Stanyan and McAllister Sts. is the one non-residential use adjacent to the site. The nearest mixed commercial/residential units in the surrounding area are approximately four block north, three blocks west, and three blocks south of the project blocks (see Figure 13, p. 44.

The proposed Cogeneration System would be located in the basement of Gleeson Library, in the northwestern corner of Lot 1 in Assessor's Block 1145. The Gleeson basement is now occupied by the University's central steam heating plant.

The Cogeneration System project site is located on the main University campus and fronts Golden Gate Ave. roughly between its intersections with Temescal Terrace and Chabot Terrace. Closest to the Cogeneration site are two-unit dwellings across Golden Gate Ave in the University Terrace neighborhood between Lone Mountain Campus and the main University campus. University uses immediately surrounding the Cogeneration site are Xavier Hall, adjacent to the library on the west, and Harney Hall, immediately



LEGEND

FIGURE 13

LAND USE MAP

USF HEALTH AND RECREATION CENTER and COGENERATION SYSTEM

- RESIDENTIAL
- EDUCATIONAL
- COMMERCIAL/ RESIDENTIAL
- R RELIGIOUS
- COMMERCIAL
- PUBLIC AND PRIVATE PARKING
- M MEDICAL
- V VACANT LOT

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

SCALE: 1" = 500'

east of Gleeson Library.

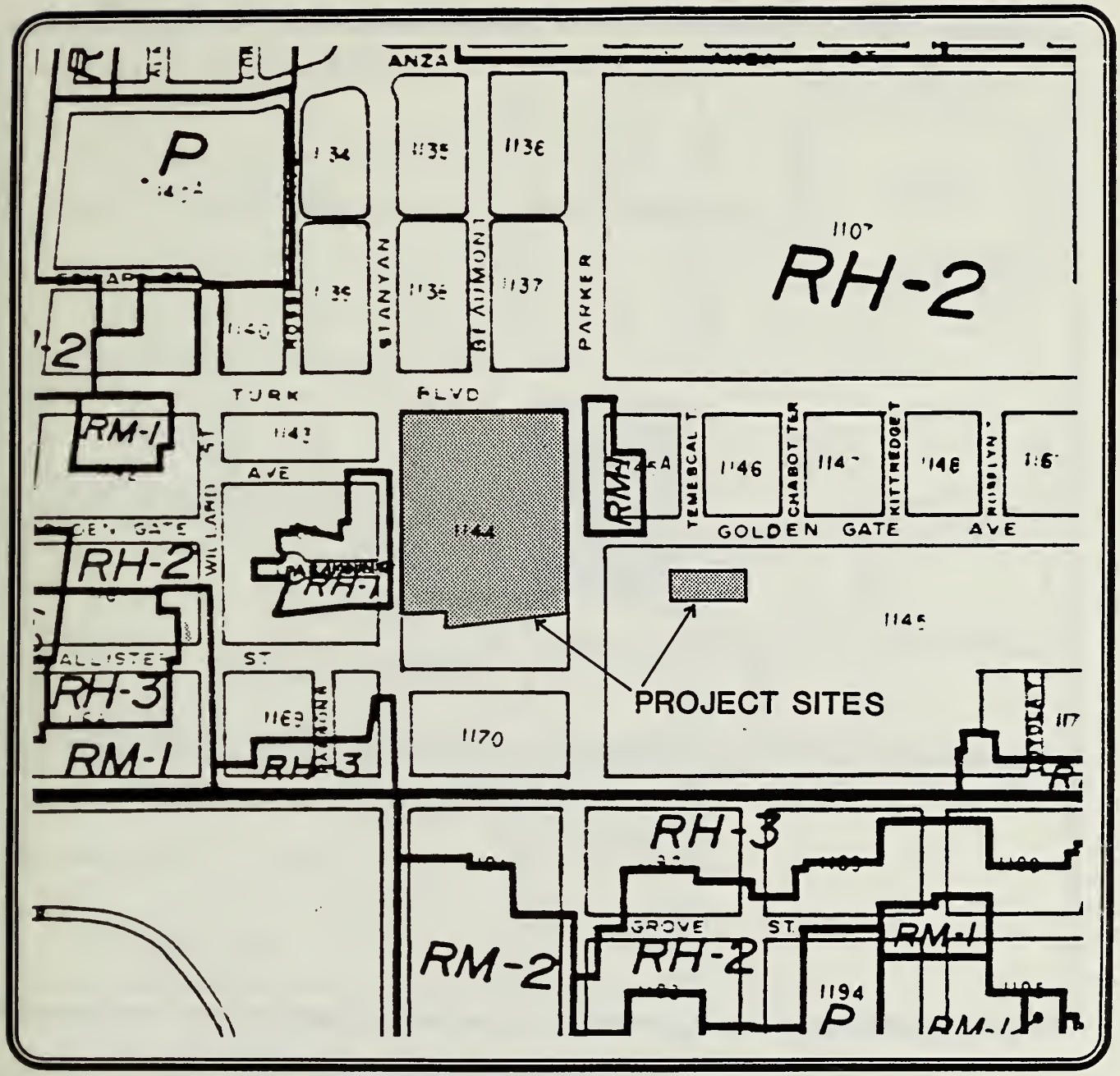
St. Mary's Hospital is two blocks south of the Health and Recreation Center project site and two blocks southwest of the Cogeneration System site (see Figure 2, p. 14), and is the owner of the vacant site at the southwest corner of Shrader and Fulton Sts. The hospital plans to construct a 6-1/2 story medical office building (including five levels of underground parking) on the vacant site.[1]

The two project blocks are within an RH-2 (House, Two Family) district, which is the prevalent zoning classification for the area surrounding USF (See Figure 14, p. 96). Exceptions to this classification are two areas: one, directly west of the Health and Recreation Center site on Stanyan St., is within an RH-1 (House, One Family), district and the other area is an RM-1 (Mixed Residential, Low Density) district. Institutional uses, such as USF, may be permitted as conditional uses in RH-2 districts, and are required to keep a current institutional master plan on file with the Department of City Planning.

The majority of the Health and Recreation Center project block is in a 40-X Height and Bulk District in which the maximum permitted height is 40 ft. (see Figure 15, p. 47). The southern portion of the soccer field and the southeastern border of the Health and Recreation Center site plus the Cogeneration System site are in an 80-D Height and Bulk District where the maximum permitted height is 80 ft. and maximum length and diagonal dimensions, applicable to building bulk above 40 ft., are 110 ft. and 140 ft. respectively.

NOTES - Land Use and Zoning

1. Robert Rhine, Sedway-Cooke (EIR consultants to St. Mary's), telephone conversation, October 1983.



ZONING CODES

RC-1	RESIDENTIAL - COMMERCIAL
C-1	NEIGHBORHOOD SHOPPING
P	PUBLIC USE
RH-1	RESIDENTIAL, HOUSE - ONE FAMILY
RH-2	RESIDENTIAL, HOUSE - TWO FAMILY
RH-3	RESIDENTIAL, HOUSE - THREE FAMILY
RM-1	RESIDENTIAL MIXED - LOW DENSITY
RM-3	RESIDENTIAL MIXED - MEDIUM DENSITY

SCALE: 1"-500'

PROJECT SITE

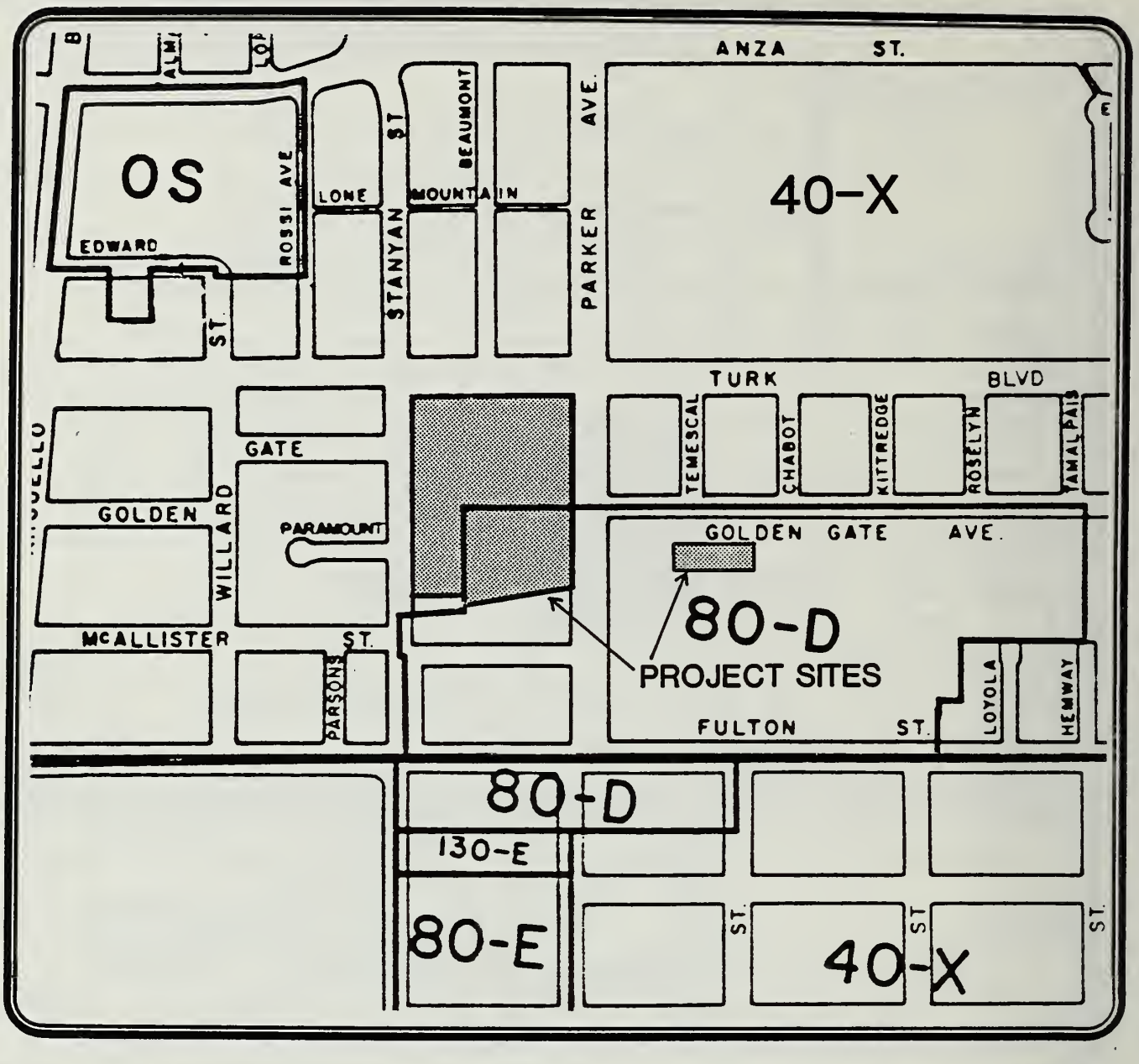
N

FIGURE 14

ZONING MAP

USF HEALTH AND RECREATION CENTER and COGENERATION SYSTEM

Source: Enlarged Photo of the City Zoning Map



SCALE 1" = 500'

PROJECT SITES

FIGURE 15

HEIGHT AND BULK DISTRICT MAP

USF HEALTH AND RECREATION CENTER and COGENERATION SYSTEM

OS — OPEN SPACE DISTRICT

NUMBERS ARE HEIGHT LIMITS IN FEET

LETTER SYMBOLS REFER TO BULK LIMITS IN CITY PLANNING CODE SEC. 270.

00-Z

N

Source: Enlarged Photo of the City Height and Bulk District Map

F. Visual Quality

The project sites are located in a residential area with one, two and three story structures as the predominant surrounding visual features. The University's cluster of large institutional structures stands to the east of the Health and Recreation Center site and envelopes the Cogeneration System site (Gleeson Library) on all sides but the north.

Views of the existing facilities at the Health and Recreation Center site from each of the surrounding streets differ. Looking west from the upper story levels of the row of homes along Parker Ave. and from Xavier Hall, the open expanse of the soccer field and parking lots is set against a distant row of 60-75 ft. tall cypress trees with Loyola Hall and Gym as the western backdrop. Th view to the northwest drifts off over residential rooftops towards Lincoln Park. From the pedestrian level along Parker Ave. views west are somewhat obstructed by 20-30 ft. trees and shrubbery which line the sidewalk.

Views to the north from the rear of the residences facing McAllister St. are screened partially by juniper and pine trees (20-30 ft. tall) located between the houses and the soccer field. Some of the residences have partial views of the tops of Loyola Gym and Loyola Hall while others look across the length of the soccer field.

Residences along Stanyan and Turk Sts. have short range views of the existing buildings on the site through a sparse row of trees (about 15-20 ft. high) and shrubbery lining the north and west sidewalks of the Health and Recreation Center site block. Two parking lots along Turk St. are visible to some of these residences, separated by a chain-link fence and sparse, low shrubs.

The rooftop location on Gleeson Library, where the Cogeneration System's radiator unit (its only external component) would be built under an existing canopy, is largely obscured from off-site short-range views because of the library's height and the canopy's setback from the building's parapet. Viewed from a higher vantage point, such as the Lone Mountain campus, the roof of the library and its rooftop mechanical structures are visible.

G. Historic, Architectural and Cultural Resources

The University of San Francisco, formerly known as St. Ignatius College, was destroyed by fire in April, 1906. The school was rebuilt at its present location in 1910.[1] When the California Jesuit Mission made its initial property acquisition in the project area, this section of the City was still largely undeveloped. The City's four cemeteries were located to the immediate north and sand dunes were the predominant landscape feature west of Parker Ave. Few homes had been built west of Stanyan St.

Construction of the Administration building, the College of Liberal Arts and St. Ignatius High School took place between 1921-1929. The College of Fine Arts was built in 1931.[1] USF experienced its greatest growth between 1950 and 1969, with the construction of ten buildings to accommodate increases in student body population. St. Ignatius High School, built in 1928, and the Gymnasium, built in 1951, became what are now Loyola Hall and Loyola Gym after the High School vacated these buildings and established a new location in the Sunset District in 1968. Shortly thereafter USF acquired the High School Property.

St. Ignatius Church, located to the southeast of the proposed Health and Recreation Center site block, and southwest of the Cogeneration System site, is the only structure on the campus and contiguous properties to receive recognition for architectural merit. This building was rated "5" (Extraordinary) in the Department of City Planning's Architectural Survey, with special emphasis given to its importance as a visual focal point in the cityscape.[2]

NOTES - Historic Resources

1. L.F. Byington, ed., The History of San Francisco, vol. III, The S.J. Clarke Publishing Co., Chicago and San Francisco, 1931, p. 278.
2. Department of City Planning, Architectural Survey, 1974.

H. Geology/Topography

The Health and Recreation Center project site consists of land that has been leveled for the soccer field, Loyola Hall and Loyola Gym. Soils studies were undertaken at the soccer field in September, 1981. The surface soils of the site consist of Dune Sands to a depth of 10-20 ft.[1] Sandy clays, silty clays and weathered bedrock underlie and are mixed within dune sands. Beneath this material lies fractured Franciscan bedrock,[2] sandstone, and shale that slopes to the southeast.[3] This material is considered to have good stability under earthquake conditions.[4]

Installation of the proposed Cogeneration System would require some excavation underneath the basement floor within the existing Gleeson Library structure. Soils underlying the library are similar to those beneath the Health and Recreation Center site except that they were disturbed more recently when Gleeson library was constructed.

The closest active earthquake faults to the proposed sites are the San Andreas Fault, approximately 6 mi. southwest of the sites, and the Hayward Fault, approximately 13 mi. to the northeast.[5] Both of these faults have a recent history of major and minor movements and their continued activity can be expected to affect the project site and the rest of the city.

NOTES - Geology/Topography

1. Lee and Praszker, Foundation Investigation, Loyola Field, University of San Francisco, California, September 1981, 14 pp.
2. Franciscan bedrock = a mixture of red, green and brown cherts (rocks composed of silica) and lava flows of basalt.
3. Lee and Praszker, Evaluation of Soils and Soil Strength Parameters in Conjunction with Proposed Addition to Kendrick Hall, University of San Francisco, California, March 1981, p. 3.
4. URS/John A. Blume & Associates, San Francisco Seismic Safety Investigation, June 1974.
5. California Division of Mines and Geology, Geologic Map of California, San Francisco Sheet, 1961, scale 1:250,000.

I. Biology

Vegetation on the Health and Recreation Center project site consists of cypress, juniper and broom. The trees vary in height, the tallest being the 70-75 ft. tall cypresses west of the soccer field. Other vegetation in the area consists of grasses and volunteer[1] herbaceous plants typical of disturbed areas. The Cogeneration System site block is dotted with landscaped areas, planters and trees of similar species. Based on data from nearby Golden Gate Park, 61 bird species could potentially visit the project sites; however, these species would be more likely to frequent the Park, as it is a larger and more diverse habitat.[2]

Mammals which could be found at the sites include various rodents, such as field mice, gophers, squirrels and wood rats. Animals from Golden Gate Park, such as skunk, raccoon, feral cats and dogs, might also be expected

to visit the site.[3] No endangered species of plant or animal are known to exist on the proposed sites. For further details on biotic setting see the Initial Study for the proposed project, pp. A-1 to A-22 of this EIR.

NOTES - Biology

1. volunteer = not deliberately planted.
2. Dr. Booker Holton, Report on Biological Resources at USF, August 1983.
3. Dr. Booker Holton, Biological Resources Consultant, telephone conversation, August 26, 1983.

CHAPTER IV. ENVIRONMENTAL IMPACTS

On the basis of the Initial Study for a proposed 9.5 mW cogeneration project, published November 1983, it was determined that an Environmental Impact Report (EIR) was required. Impacts mitigated to a level of insignificance and those with insignificant effects were focused out of the EIR. They were: biology, cultural resources, cumulative land use, population/employment, seismic, transportation/circulation, and utilities/public services impacts. After the Initial Study was published, a Health and Recreation Center was proposed and added into this EIR. Later, as a result of discussions with both neighborhood groups and the University community, the 9.5 mW Cogeneration facility was deemed an inappropriate use on campus and a smaller 1.8 mW system was proposed as a replacement for two aging boilers in the campus steam plant. This latest proposal would not seek to sell power for profit; rather it would supply just the electrical and steam demands of the University. Although the other above listed impacts remain focused out of this EIR, the scope of population/employment, utilities/public services, geology, water quality, biology and cultural impacts has changed somewhat due to the addition of the Recreation Center; these changes are discussed below. Transportation/circulation impacts for the Recreation Center have been added into this EIR as well.

Population: The Health and Recreation Center portion of the project would provide five full-time jobs. In addition to these full-time jobs, about 30 part-time jobs could be occupied by students per semester. About 150 person-years of construction labor would be provided during the approximately 18-

month construction period. The project would not induce substantial growth or concentration of people, displace a large number of people or create a substantial demand for housing.

Utilities/public services, Water quality: The project would increase demand for utilities and public services. The Health and Recreation Center would use water for the swimming pool and showers. Water would be supplied to the Recreation Center through existing mains that would not require any modification. No expansion of existing sewage facilities would be required to serve the proposed Recreation Center. The gas main serving the Cogeneration site may have to be enlarged (see p. 58).

Geology: Soils underlying the Health and Recreation Center site are considered to have good stability under earthquake conditions.[1] The project sponsor would obtain a site-specific soils report from a California licensed soils engineer and would construct the project in accordance with the recommendations of this report.

Biology: Cypress trees growing between the west edge of the soccer field and the east side of Loyola Hall and Loyola Gym would be removed before construction of the proposed Recreation Center. After construction is completed, new landscaping would be planted along this corridor. Landscaping would also be planted along Stanyan St., within the parking lot and around the soccer field (see Figure 6, p. 21).

Cultural: Since the Recreation Center site was disturbed during construction of Loyola Hall and Loyola Gym, it is unlikely that archeological resources are present at the site. However, if any archeological resources were found on the site during construction, the project sponsor has agreed to the mitigation measure on p. 87.

Fiscal: The Initial Study for the 9.5 mW facility stated that the EIR would contain a discussion of impacts of project financing on USF. Because the originally proposed 9.5 mW project has been down- scaled to a 1.8 mW steam replacement system that would only produce enough heat and power for the University's consumption, a discussion of fiscal effects has been omitted.

In the spring of 1984, due to neighborhood concern over several projects proposed for the Greater Haight Ashbury Area, the Department of City Planning undertook a report to provide an overview of cumulative impacts of all the projects proposed.[2] Projects covered in this report, in addition to those proposed by USF, are: St. Mary's Medical Office Building, Cannes Apartments, Urban School of San Francisco Expansion, Polytechnic High School Conversion, St. Joseph's Hospital Conversion (Park Hill Residential), and the UCSF Vision Research Module. Cumulative Impacts, where applicable, are discussed at the end of each section in this chapter.

NOTES - Impacts

1. URS/John A. Blume & Associates, San Francisco Seismic Safety Investigation, June 1974.
2. Greater Haight-Ashbury Cumulative Assessment Report, December 21, 1984. Available at the Department of City Planning, 450 McAllister St., 5th Floor, San Francisco, CA 94102.

A. Energy

Regional Energy Impacts

The Cogeneration System, in producing both electrical and thermal energy, would consume more natural gas than is currently required at USF to produce steam alone, however, the total fuel required to produce electric and

thermal energy in the cogeneration system would be less than the total fuel required to produce the same amount of power and heat in separate systems, resulting in a net decrease in fuel use in the region. Generation of electricity at USF would reduce the amount of electricity PG&E would need to produce. Approximately 1,800 barrels of oil per year would be saved as a result of operation of this cogeneration facility.[1] Production of electricity by this and other cogeneration facilities might, by satisfying local power demands, help to postpone construction of new PG&E power plants needed to meet increasing demand. PG&E estimates that operating and planned cogeneration projects with which they have contracts or commitments are capable of generating over 700,000 kW, which is more than enough power to serve a city the size of Oakland.[2]

Additional energy savings would be realized through the use of power produced at USF rather than electricity generated by PG&E far from San Francisco. Power generated outside San Francisco is subject to greater transmission losses[3] en route to its point of use in the City than locally produced power.

The Public Utilities Regulatory Policy Act (PURPA) requires PG&E and other utilities to purchase locally produced power at a rate comparable to the incremental cost saved by the utility not generating the power itself (the utility's "avoided cost"). This avoided cost includes the cost of power production at existing facilities and the potential cost of power production at plants which would be constructed to meet regional increases in power demand. PG&E would therefore purchase energy at an avoided cost rate from the proposed Cogeneration System when the system produces more electricity than can be used by the University.

Steam

By producing up to 6,700 lb./hr. of 35-50 psi steam, the Cogeneration System would be able to meet the peak demand of all the campus buildings using steam. The Cogeneration System would be sized so that buildings proposed in the USF Institutional Master Plan (if constructed) could be served by the system by increasing the number of hours the system operates from 16 hrs./day to 24 hrs./day.

Demand for steam to heat USF campus buildings varies on a daily and seasonal basis. The proposed Cogeneration System could meet the average nighttime steam demand of 2,000 lb./hr. by running only a short time. The proposed system would be in operation approximately 16 hrs./day to meet the average daytime demand of 8,400 lb./hr. Annual campus demand averaged over a 24-hour period for steam is approximately 5,000 lb/hr; peak demand is about 10,000 lb/hr. During these peak periods, the two existing auxiliary boilers could be operated to augment the Cogeneration System. Energy conservation programs at USF have also reduced steam demand, for which new values are not yet available.

The Health and Recreation Center would be connected to the steam distribution system (see Figure 10, p. 28), and would use steam for space and water heating. Hot water would be used in locker rooms and to heat the swimming pool. When the Cogeneration System is not functioning, such as during maintenance, a conventional back up boiler would be used for the Recreation Center's space and water heating.

Electricity

Electrical generation of the proposed Cogeneration System would be about 1,875 kW gross for 16 hrs./day. Net electrical production would be 1,770 kW. Based on average steam load, the gross annual electric output of the Cogeneration System would be about 12 million kWh. Maximum electricity consumption for operation of the Cogeneration System (radiator and other uses) would total about 600,000 kWh annually, resulting in a net annual output of approximately 11,400,000 kWh. Electrical consumption by the Cogeneration System would be fairly constant at about 1200 kWh./day throughout the year.

Campus electricity use totalled 9.2 million kWh in 1984, which would be equivalent to about 85% of the electrical output of the proposed plant operating at a projected average of 16 hrs./day. An additional annual electrical demand of about 4.6 million kWh would be expected if all buildings proposed in the USF Master Plan are constructed. With Master Plan buildout, the total annual USF electricity use is projected to be 14 million kWh, about 90% of the estimated electricity production of the proposed Cogeneration System when operated at full capacity.

Natural Gas

The Cogeneration System would result in a net increase in natural gas consumption by USF of approximately 225 therms/hr.[4]; about 1,700,000 therms/yr., as compared to natural gas use of 705,000 therms/yr. in 1982. Initially, the usage of natural gas would average about 16 hrs./day. If necessary, PG&E would enlarge the gas main supplying the site to accommodate this flow.[5]

For the proposed Health and Recreation Center, natural gas consumption would not be related to floor space. California Administrative Code Title 24 energy conservation standards for buildings would not apply to the Recreation Center project because the building would be supplied with less heat than the threshold value of 10 Btu/hr. per sq. ft.[6]

The probability of natural gas service interruption would be low. Cogeneration facilities, under the California Public Utilities Code, have "P-3A" priority for purchasing natural gas, which is a higher priority than that for utility and large commercial/industrial users and a lower priority than that for small commercial and residential users. In the event of a natural gas shortage, cogeneration facilities would be able to purchase natural gas when utility, industrial and large commercial customers with interruptible service (including gas-fired boilers) have their service curtailed.

PG&E expects adequate gas supplies to be available for the project lifetime and expects supplies for the next five years to be "extremely stable."[7] The Federal Office of Technology Assessment concludes "that substantial technical uncertainties prevent a reliable estimation of the likely natural gas production rates for later in this century".[8] There has been no interruption of natural gas service to a cogeneration facility on record, and there has been a "very low" incidence of interruption of natural gas service to PG&E customers with interruptible service.[7] Natural gas supply to the existing main steam plant at USF was interrupted for one day during the last five years, requiring use of backup fuel oil.

NOTES - Energy

1. "Each megawatt of electricity produced by cogeneration saves at least 1,000 barrels of oil a year." From: Gandara and Park, "Municipal Cogeneration", in California Energy Commission, Cogeneration in Muni-

cipalities: Proceedings from Workshops for Local Governments and Municipal Utilities, January 1982, pp. 8-9.

2. PG&E, PG&E Progress, October 1983, p. 2.

3. transmission loss = power lost during transmission of energy from one point to another along a power line; this loss is proportional to the length of the line.

4. Projected on the basis of current demand per sq. ft. of building.

5. Stuart Tartaglia, PG&E, Marketing Department, telephone conversation, 30 September 1983.

6. California Administrative Code, Title 24, Part 6, Article 2, "Energy Conservation Standards for New Non-residential Buildings," Division 4, T-20-1490B.

7. Sam Wells, Commercial Division, PG&E, telephone conversation, 9 September 1983.

8. Office of Technology Assessment, Congress of the United States, News Release, 22 September 1983, avaliable for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

B. Air Quality

Emissions would be produced by two different project related sources: auto mobile traffic generated by the proposed Recreation Center and operation of the proposed Cogeneration System. The principal traffic generated emission, carbon monoxide (CO), would not be detectable either by direct sampling techniques or computer modeling because the increase in traffic volume generated by the Recreation Center would be negligible (see Section D, p. 72).

Operation of the Cogeneration System would involve the combustion of natural gas, yielding air pollutants as outlined in Table 3, p. 61. The pollutant composition of these emissions would not differ from that of the existing biolers since both systems burn the same fuel. Of these pollutants, only nitrogen oxide (NO_x) emissions would be sufficient in quantity to trigger

TABLE 3. Daily Air Pollutant Emissions

Pollutant	1987 Projected Regional Emissions[1] (tons/day)	Project Emissions (tons/day)	Percent of Regional Emissions	Project Emissions (lbs/day)	"Trigger Levels"[2]	
					BACT (lbs/day)	PSD[3] (tons/yr
Nitrogen Oxides (NO_x)	692	0.14	0.0002	279.8[4]	150	100
Carbon Monoxide (CO)	3,367	0.14	0.00004	279.8[4]	550	100
Hydrocarbons (HC)	797	0.07	0.00009	139.0	150	NA[5]
Total Suspended Particulates (TSP)	192	----	----	----	150	25

1. Association of Bay Area Governments (ABAG), BAAQMD, MTC, 1982 Bay Area Air Quality Plan, 1982, p. 53. The region is the nine county Bay Area Air Quality Management District.
2. Trigger levels = exceedence limits above which pollution controls must be used.
3. Federal Regulations on Prevention of Significant Deterioration, 40 CFR 52.21.
4. Approximate value, provided by Robert Fishman, FMC Associates, Engineers., Telephone conversation of December 5, 1984.
5. NA = not applicable.

Source: Bendix Environmental Research, Inc.

a Bay Area Air Quality Management District (BAAQMD) requirement for use of Best Available Control Technology (BACT), which is the maximum degree of emissions reduction that a particular source can achieve (see Table 3, p. 61). BACT would be implemented by the project sponsor in the form of a lean burning (natural gas only) engine. Natural gas is the cleanest burning fossil fuel and it would not produce unusual or highly toxic products of combustion.

In order to obtain authorization to construct and operate the cogeneration system, the project sponsor would be required to comply with the applicable federal, state and regional air quality regulations, including the U. S. Clean Air Act and the BAAQMD Rules and Regulations (see p. 29). At the size proposed, and with BACT implemented, emissions from the project would represent .02 percent (0.0002) of the projected regional emissions for NO_x (the proposed projects worst emission) and would be within growth projections contained in the 1982 Bay Area Air Quality Plan.[1] The project, by complying with federal, state, and regional air pollution regulations which are designed to prevent impacts of air pollution on health, would not be expected to affect persons working or residing near the Cogeneration System, or patients of St. Mary's Hospital and Medical Center.

New project emissions would be partially offset by the closure of two of the four existing 25-year old boilers at USF, thus terminating their air pollutant emissions. The BAAQMD would determine the amount of air pollutants eliminated by closure of the two boilers during the process of granting permits for the new facility.

Project air pollutants would be discharged from the existing, 45 ft. high, boiler plant exhaust stack and would be subject to the strong prevailing

winds in the site area which would reduce concentration of emissions in the site vicinity. The cooling process would produce a water vapor plume which might be visible on cool, damp days when droplets of water would condense due to the air's reduced ability to hold water vapor at lower temperatures; this vapor would be expected to dissipate quickly in prevailing winds.

Construction Air Quality Impacts

Construction activity would temporarily generate some air pollutants in the project vicinity. Construction equipment would release exhaust which could irritate people in neighboring buildings during construction hours. Site preparation and construction activities would intermittently cause dust and other particulate matter to become suspended in the air. Violations of the State 24-hour Total Suspended Particulates (TSP) standard might occur in the immediate vicinity of the project on these occasions. Mitigation for this impact has been proposed as part of the project. (see Chapter V., Mitigation Measures, p. 89).

Cumulative Air Quality Impacts

The USF projects would contribute to both aspects of cumulative emissions in the Greater Haight Ashbury: indirect traffic generated emissions, and direct heating emissions. The University projects' contribution to cumulative indirect emissions would be negligible as vehicular trip generation for the two projects is small enough as to be imperceptible within the daily fluctuations of traffic.

The proposed cogeneration system would account for about 60% of the total cumulative increase in NO_x emissions, 10% of the projected cumulative CO

emissions, and about 40% of the cumulative direct and indirect hydrocarbon emissions. As discussed in the Greater Haight Ashbury Report, the levels of total cumulative increase are within growth projections and specific control measures contained in the 1982 Bay Area Air Quality Plan.

NOTES - Air Quality

1. ABAG, BAAQMD, MTC: 1982 Bay Area Air Quality Plan, 1982.

C. Noise and Vibration[1]

There are three potential sources of noise associated with the Health and Recreation Center and the Cogeneration System: noise generated by activity at the Recreation Center (including traffic-generated noise), noise generated by the Cogeneration System and temporary noise generated during demolition and construction phases of the projects.

Health and Recreation Center

Noise which would be generated inside of the Recreation Center by intramural sports activities would not be audible in the adjacent neighborhood because of the intrinsic insulation of the building and the attenuation of noise over the distance to the nearest homes. Noise from activity on the soccer field would be at about the same level as noise generated by similar activities at present. Noise levels along streets (Parker Ave. and Turk St.) serving the Recreation Center would not be measurably increased by vehicles arriving at or leaving the proposed project. Traffic volumes would have to double during a given interval of time to raise the noise levels 3 dBA, and cause a perceptible change.[2] As the increase in traffic volumes for the Recrea-

tion Center would be negligible (see Section D, p. 72) no transportation noise impacts associated with the Recreation Center would occur.

Cogeneration System

The Cogeneration System would be located beneath Gleeson Library in the existing Steam Plant (see Figure 8, p. 24), about 140 ft. from the nearest residences across Golden Gate Ave. The ambient noise level in the nearest residential area is 38 dBA during the night and 47 dBA during the day (for existing background noise level, see Table 2, p. 39).

There are three criteria against which noise generated by this system may be assessed: noise emission limits contained in San Francisco Noise Ordinance No. 274-72; community response to potential increases in noise levels above background levels; and finally, activity interference criteria such as the potential for speech or sleep disturbance inside residences.

The San Francisco Noise Ordinance requires that noise levels not exceed 55 dBA outside of the nearest home during daytime hours (8:00 AM - 5:00 PM) or 50 dBA during nightime hours (10:00 PM to 7:00 AM).

Studies have shown that community response is directly related to the amount by which the new noise sources exceed typical existing levels in an area. The International Standards Organization reviewed the research on this subject and developed the following conclusions regarding community response: differences of 5 dBA or less are of marginal significance. Complaints, however, may certainly be expected if the difference reaches 10 dBA or more.

Activity interference criteria are based on studies that attempt to determine which noise levels will interfere with various activities. For a

worst case analysis of a facility that operates more or less continuously over a 24-hour period, the most stringent of these criteria is the potential for sleep interference. The United States Environmental Protection Agency has suggested that to protect against sleep disturbance for the great majority of the population, noise levels in bedrooms should not exceed 32 dBA. Allowing for the reduction of noise between outdoors and indoors, this equates to a level of 47 dBA outside, assuming that the windows in the bedrooms are open and that the bedrooms face the noise source.

Two of the existing boilers in the Gleeson Library basement would be replaced with a 1,875 kW engine generator. The exhaust from this unit would pass through a heat recovery boiler, then into a hospital-grade muffler and out through the existing exhaust stack on the Gleeson Library Building. A fan and radiator would be located on the roof of Gleeson Library to function similarly to an automobile radiator and vent excess engine heat. Preliminary analysis indicates that periods of maximum demand would typically be during the morning hours. However, because it is possible that the system would run at night, a worst case analysis has been performed assuming operation of both the engine generator and the radiator at nighttime.

The generator would be surrounded by a noise reducing enclosure (or shell) which would reduce sound levels generated within the boiler room to the present level of about 75 dBA. Noise emanating from the boiler room would be inaudible in nearby residences both during daytime and nighttime hours.

Noise generated by the exhaust of the diesel engine generator could exceed ambient levels on occasion by up to seven dBA, but would average less than 45 dBA outside the nearest homes. This would equate to an average indoor noise level of 30 dBA which would be below that associated with sleep dis-

turbance and while it would be audible, would not be considered "noisy". A sound level of 30 dBA is equivalent to the noise level in an unoccupied auditorium with just the air-conditioning system running.

Sound levels generated by an unmodified radiator unit on the roof of the Gleeson Library could reach 59 dBA at the source.[3] This level would equal the noise limits established by the San Francisco Noise Ordinance of 55 dBA during the daytime and 50 dBA during the nighttime, as measured at the nearest residences, because of the natural attenuation of sound as it traveled the 150 ft. distance to the nearest homes. Further noise reduction would be achieved by use of a two-speed fan which, when operated at low-speed during the night, which would reduce radiator noise levels to approximately 45 dBA outside the nearest homes. A level of 45 dBA ouside the nearest home would equate to an indoor sound level of 30 dBA, which would be below the level of sound associated with sleep disturbance.

As both the engine generator and the radiator could be operating simultaneously, the noise of these two units would be additive. Accordingly, a noise insulating enclosure would be built around the heat radiator, reducing noise generated at the source by seven to nine dBA. The resulting sound levels of the radiator unit, as measured at the homes nearest the library site, would be about 43 dBA during the day and 38 dBA at night. Both of these projected levels are within the respective daytime and nighttime ambient sound levels in the area. Thus, sound levels generated by the proposed Cogeneration System would, at worst case, be equal to maximum noise levels of the existing setting (47 dBA during the day and 38dBA at night).

Construction Noise Impacts

Noise levels would be temporarily elevated in adjacent residential areas

during the approximately 18-month construction period. Because construction noise is temporary, standards adopted to control construction noise emission tend to be less restrictive than those controlling permanent noise sources. In general, standards are designed to protect against significant activity interferences, such as sleep disturbance and speech interference.

Any project undertaken in the City of San Francisco must conform to the San Francisco Noise Ordinance, which prohibits all powered construction equipment, except impact tools, from generating noise in excess of 80 dBA measured at a distance of 100 ft. Impact tools and equipment, including pavement breakers, jackhammers and pile drivers must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. The ordinance further requires a special permit for construction after 8:00 PM and before 7:00 AM.

Construction of the Health and Recreation Center would involve five phases. The first phase would be the demolition of the existing Loyola Hall and the partial demolition of the existing Loyola Gym. It is anticipated that this demolition would occur over a two week period. During this period the major noise generating equipment would be jackhammers, front end loaders, trucks and a backhoe-mounted ram. The jackhammers, trucks and loaders all generate maximum noise levels of 80 to 85 dBA measured at a distance of 50 ft. The backhoe-mounted ram, which would be used intermittently during the first two-week period to demolish building floor slabs, generates noise levels of about 100 dBA at 50 ft. The nearest homes to the demolition activity are located opposite the site along Stanyan St., the closest of which is about 80 ft. from the proposed project. Maximum noise levels inside these homes with the windows closed would range from 59 to 61 dBA

when the jackhammers, trucks and loaders are operating. Noise levels generated by the backhoe-mounted ram would reach about 76 dBA in the nearest homes with the windows closed, which would be high enough to disrupt indoor activities. There is also a potential for occasional speech disturbance during the use of the jackhammers, trucks and loaders.

Excavation, the next construction phase, would require about eight weeks and would entail the use of scrapers, bulldozers, a crane, front end loaders and trucks. As this activity would take place over the entire construction site, residences along Stanyan and Turk Sts. and Parker Ave. would all be exposed to this noise for varying amounts of time. The nearest residences would be those on Stanyan and Turk Sts., located between 80 and 300 ft. from this activity. Parker Ave. residences would be located over 300 ft. from this activity. Maximum noise levels inside the nearest homes, with the windows closed, would range from 57 to 60 dBA during this phase. There would be an occasional potential for some speech interference indoors.

Foundation construction would take approximately five weeks. During this time, the major noise source would be from concrete pumping trucks. These trucks would most likely be positioned in the interior of the site, either on the parking lot or on the soccer field, where the concrete would be pumped to the foundations. Nearby residences on Stanyan St., across from the site, and along McAllister, adjacent to the sites, would be exposed to this noise. Maximum noise levels inside these homes would reach about 55 dBA, eight dBA above the daytime ambient levels.

The concrete structures would then be erected; this phase of construction would last for nine to ten months. During this time, major noise sources would be concrete pumping trucks, air compressors and cranes. Noise gener-

ated by the concrete pumping trucks could reach 63 dBA inside nearby residences located on Stanyan St. The sound of cranes could reach 55 dBA inside these homes, and noise generated by air compressors could reach 50 dBA. During this phase of construction there would also be a potential for some speech interference inside the nearest homes. This equipment would be used sporadically during this construction phase.

The final construction phase would be the metalwork and finishing phase, which would take place primarily indoors and last about six months. The majority of this activity would be inaudible inside the nearest homes, with the possible exception of impact wrenches used to bolt metal pieces together. This activity would generate noise levels of about 65 dBA for short and sporadic moments in the nearest homes on Stanyan St.

Installation of the Cogeneration System would require a one year construction period. The initial four-month phase would include: cutting and removal of a wall panel from the Gleeson Library basement site, removal of two steam boilers and associated piping, pouring a new foundation slab on the basement floor and installing the Cogeneration machinery. Impact tools and jackhammers would be used to remove the wall panel from the Gleeson Library basement and to remove the two gas-fired boilers. The nearest private residences to the site, located about 140 ft. away, across Golden Gate Ave., may experience occasional speech disturbance during the use of jackhammers and trucks. Periodic disturbance to students using the Library and Library staff would occur during the initial construction phase.

After this approximately four month period, the basement wall would be replaced and the rest of the construction would be conducted within the soundproofed shell of the Steam Plant and would not be expected to disturb

residents inside the nearest homes on Golden Gate Ave.

Construction activities relating to the Cogeneration System but occuring in other areas of the University would include: replacement of old electrical transformers adjacent to the Steam Plant and installation of new steam piping to the Health and Recreational Center. These activities would occur over the last four months of construction and would occur primarily underground and thus would not generate excessive amounts of noise.

Cumulative Noise Impacts

The two USF projects, the Recreation Center and the Cogeneration facility, would be located approximately 1,000 feet from each other and over 1,000 feet from the St. Mary's Medical Office Building project, the closest of the other projects in the Greater Haight study area to these projects. There would be no perceptible cumulative noise impacts associated with the traffic generated by these projects or by the operational noise generated after completion of the projects. Each project is far enough removed from the others so that a residence located within the audible range of one project would not be exposed to cumulative noise from another project.[4]

There is the potential for either slightly higher noise levels during construction or an increased amount of time persons might be exposed to construction noise for residents located between any two of the three projects. Construction noise associated with the projects would cumulate if any two of the three projects went forward at the same time. Because of the dense development in this area, persons exposed to high construction noise levels of one project would experience noise levels associated with the other project that would, at most, be just detectable above the back-

ground sound levels in the area. Persons located halfway between these projects would be exposed to relatively low noise levels from either project.

Vibration Impacts

The Cogeneration System engine would be placed on a thickened concrete slab in order to absorb vibration. Rubberized mounts would be used underneath the machinery to further dampen vibration. Vibration from the operation of the Cogeneration System is not expected to disturb users of the library directly above or occupants of the nearest homes, 150 ft. away.

NOTES - Noise and Vibration

1. Noise analysis by Charles M. Salter Associates, San Francisco. Report on file with Department of City Planning, Office of Environmental Review, 450 McAllister St., San Francisco, CA, 94102.
2. Charles M. Salter, Charles M. Salter Associates, telephone conversation, of August 4, 1984.
3. Robert Fishman, FMC Associates, Consulting Engineers, telephone conversation of March 5, 1985.
4. Richard Illingworth, Charles M. Salter Associates, telephone conversation of February 27, 1985.

D. Transportation, Circulation and Parking[1]

The transportation impacts discussed below are associated primarily with the Health and Recreation Center. The Cogeneration System would contribute to traffic impacts during its construction period but not after its completion.

Construction Traffic

Construction vehicles, either hauling debris from the Health and Recreation Center Site or delivering materials to it would increase traffic on local

streets during the 18-month construction period. During the first three months, demolition and excavation would require an average of about six truck stops per day (12 trip ends). The subsequent foundation pouring and wall erection phase would last approximately nine months and require about six concrete trucks per day initially (12 trip ends) and taper to two truck stops daily (four trip ends) by the end of the period. The remaining six month finishing period would require an average of three delivery truck stops per day (six trip ends) at the site.[2]

With approximately 150 person-years of construction labor required[3] for the Recreation Center project, and if all construction employees drive with little ridesharing and similar work shifts, about 80 vehicle trips would be generated during the employees' evening commute period.[4] Construction workers would park their commute vehicles on site during construction.

Approximately 23 person-years[3] of construction labor would be required for the Cogeneration System, resulting in an increase of about 20 commute period vehicles. Most of the construction traffic created by the one-year installation of the the Cogeneration System would occur during the first four months, when two steam boilers would be removed from the Gleeson Library basement. During this time an average of two truck stops per day (four trip ends) would occur along Golden Gate Ave. A portion (approximately 10 vehicle spaces) of the parking lot adjacent to Gleeson Library would be occupied by construction vehicles as a staging area during the installation period.

Cumulative Construction Traffic

A worst case situation for cumulative construction traffic impacts would

exist if the USF projects were constructed at the same time as the proposed St. Mary's Medical Office Building. Construction workers would be at the sites when truck trips for the various operations would be made, so very few of the operations trips would overlap with commute trips of the construction workers. The construction industry usually operates on an earlier daily schedule than other businesses (7 AM to 4 PM), with their AM and PM commute periods occuring earlier than the systemwide peaks.

If construction of the St. Mary's Medical Office Building and the USF projects coincided, traffic effects would be more concentrated. If all three projects were in the phase of construction that would generate the greatest volume of truck trips at the same time, a total of 112 per day would visit this vicinity. Shrader Street may be too steep along the Medical Office Building frontage to use it consistently for truck trips to the Medical Office Building site. This would place more trips on Fulton and Stanyan Streets, two streets offering major access to the USF projects. Such cumulative construction traffic would probably exacerbate the already congested condition of the Fulton/Stanyan intersection. However, Turk St. and Geary Blvd. to Stanyan Street are two logical alternative routes to USF. Nearby construction is a factor taken into account by the Department of Public Works when routes for construction operations traffic are developed.

Trip Generation

Trips presently generated by Loyola Hall would be relocated to other parts of the USF campus by the relocation of Loyola Hall's activities, so there would be no net reduction of trip-ends in the area surrounding the USF campus resulting from the building's demolition.

Five groups of people would be expected to use the proposed Health and Recreation Facility: USF students, faculty, staff, alumni and residents of the community surrounding the University. Most of the student, faculty and staff daily trips to the Recreation Center would be internally generated and would not represent new trip ends. That is, each person's classes or job would be the external generator of the trip to USF and not the Recreation Center itself. Therefore, new trips generated as a result of the Recreation Center project would be those of alumni and community residents, (plus those of any students that would travel to USF only to use the proposed facility).

To estimate the approximate the number of new alumni and community resident trips, data were assembled on the use of the existing USF recreational facilities, and a study of a similar facility (the Almaden Athletic Facility in San Jose) was examined.[5] The survey of existing USF recreational facilities showed that approximately 99% of the users are students, and the remaining 1% are faculty, staff and alumni.[6] Less than ten USF alumni currently use the University's recreational facilities.[6] For the proposed Recreation Center, USF expects to retain the proportion of student, faculty and staff users at approximately 95% of the total number of users, with the alumni and community residents comprising a maximum of 5%.

The proposed Health and Recreation Center would generate about 4,000 weekday trips, 2,500 Saturday trips and 3,200 Sunday trips.[5] When these trips are distributed among the user groups according ot the expected ratios, new trips generated by alumni and community residents would be approximately 200 persons on weekdays, 125 people on Saturdays and 160 on Sundays. Alumni and community residents would most likely use the proposed facility

during early morning and evening hours on weekdays and at various times on weekends.[5] USF has stated that it may restrict the times alumni and community residents are allowed to use the Recreation Center to weekdays during the periods of 6-9 AM and 5-9 PM (assuming the new facility would be open at these hours). Assuming these restrictions, the peak hour of use on weekdays for alumni and community residents would be between 6 and 7 PM.[6] During this period, about 24%, or 47 of the daily alumni and community resident trips would occur.

Mode Split

The mode split for alumni and community resident users of the proposed Recreation Center was estimated based on the mode split of UCSF campus visitors.[7] UCSF, like USF, is an educational institution located in the Greater Haight-Ashbury area, and has similar traffic access, transit service and availability of off-street and on-street parking. The following mode split has been used for the analysis in this report: 72% auto (including carpools and taxis), 22% MUNI and 6% walk.

Traffic Impacts

The project would add about 144 new weekday vehicle-trips to the streets surrounding USF. Approximately 34 of these vehicle-trips would occur during the peak use hour of 6-7 PM. The entrance to the proposed project's parking lot would be located on the south side of Turk St. just west of Parker Ave. The number of new vehicle-trips generated by the proposed Recreation Center would be greatest at the Stanyan St./Turk St. and the Parker Ave./ Turk St. intersections between 6 and 7 PM weekday evenings, however traffic

volume on these streets at this time would be lower than during the peak hour.

During the PM peak hour (4:30-5:30 PM), when the streets are most heavily used, the proposed project would generate about 30 new vehicle-trips. The volume-to-capacity[8] ratio at Stanyan and Turk Sts. would increase by about three percent with the project; this intersection would remain at level of service B.[9] The volume-to-capacity ratio at Parker Ave. and Turk St. would not change during the peak hour period and would remain at level of service A. For the AM peak hour (8-9), about 12 new vehicle-trips would be generated by the project, and would have undetectable impacts on the two intersections mentioned above.

Parking Impacts

The proposed Recreation Center would provide a single 172-space on-site surface parking lot to replace the three existing on-site lots, which contain 185 spaces. The proposed parking lot would result in a 13 space reduction in on-site parking. Other lots at USF would be reengineered to create an additional 13 spaces.[10] These 13 permanent spaces would serve to offset the number of parking spaces lost at the Health and Recreation Center project site and would continue to serve students, faculty and staff of the University. Alumni and community resident users of the proposed Recreation Center would generate a maximum new parking demand for about 34 vehicles between 6 and 7 PM on weekdays. Currently, vehicle occupancy at the three lots drops to less than 30% after 6 PM on weekdays.[11] Assuming this trend continues, there would be adequate space available to accommodate the projected increase in weekday PM peak demand. During daytime hours, no new

parking demand would be generated by the proposed project, assuming that alumni and neighborhood use is restricted as expected.

Transit Impacts

The proposed Recreation Center would generate approximately 44 new MUNI trips on weekdays. About 10 of these trips would occur between 5 and 6 PM, the peak hour of new public transit use by people visiting the proposed project. Because MUNI trips would be divided among lines 5, 31 and 43, all of which serve the University, no one line would receive all 10 of the trips, thus none of the lines would be measurably affected by new transit riders from the Recreation Center.

Pedestrian Impacts

Approximately 900 people currently visit Loyola Hall and/or Gym each day during the academic year, generating about 1,800 trips per day. These trips are distributed to and from both the main USF campus and the Lone Mountain campus, with the majority of students coming from or going to the main campus across Parker Ave. between Golden Gate Ave. and McAllister St. No pedestrian flow problems currently exist at the above intersection or along the sidewalks surrounding the Health and Recreation Center project site. San Francisco Police Department has recorded four auto accidents during the past year on Parker Ave. between the main campus and Loyola site,[12] however, none of those accidents involved pedestrians.

New pedestrian trips from off campus generated by alumni and community residents would amount to approximately 24 new daily trips and would not have a measurable impact upon existing pedestrian flows. New student trips

to the Health and Recreation Center site from elsewhere on campus would increase by about 2200 trips/day, and most of these would probably cross Parker Ave. at mid-block, just south of Golden Gate Ave. No crossing signal would be required because of the minimal volume of vehicular traffic on Parker Ave.[13] Both the Parker Ave./Turk St. intersection (500 ft. north) and the Parker Ave./Fulton St. intersection (300 ft. south) are regulated by signals.

Cumulative Transportation Impacts

The USF Health and Recreation Center would generate approximately 3% of the total net new daily vehicle trips in the Greater Haight-Ashbury cumulative study area and about 8% of the PM peak hour trips (5-6 PM). Approximately 3% of the cumulative increases in transit trips and 6% of the peak new transit trips would be attributable to the Recreation Center project. Only major corridors would be measurably impacted by the cumulative development to which USF would contribute in the aformentioned percentages. The Fell/Oak St. corridor would experience an approximate increase in 24-hour two-way traffic of 4%. Fulton St. west of Stanyan St. would receive about a 6% increase in daily two-way traffic.

NOTES - Transportation

1. Transportation analysis by DKS Associates, Oakland, May, 1984 under contract to Bendix Environmental Research, Inc. A copy of the report and existing traffic counts are available for review at the Office of Environmental Review, 450 McAllister St., 5th Floor, San Francisco, CA.

2. Telephone conversation with Don DesJardin of Amorono Construction Co. August 14, 1984.

3. An estimated $10 million (1984 dollars) would be spent during construction. Labor costs are projected to be approximately 55% of the total ($10 million x .55 = $5.5 million), including direct wages, taxes and

fringe benifits; an annual cost of $36,000 per construction worker.

4. 150 person-years averaged over an 18-month construction period equals a maximum 100 workers on site at any one time. 100 workers divided by a load factor of 1.2 persons per vehicle equals approximately 80 vehicles.

5. Caltrans, 12th Progress Report on Trip Ends Generation Research, December, 1979. The Almaden Facility was chosen as the best available source of information applicable to the proposed project. That is, a facility housing several activities, located in a similar geographic region and one with general information available for both weekday and weekend use.

6. Chuck White, USF Director of Intramural Athletics, telephone conversation, May 4, 1984.

7. UCSF TSM Management Study: Consultant's Final Report, September, 1977.

8. The ratio of of volume of traffic to capacity for a road; V/C ratios are useful to estimate levels of service and congestion.

9. Field observations by BERI, June 5, 1984. For Level of Service definitions see Appendix D, pg. A-28.

10. Parking study by Pfleuger Architects, 14 March 1985. On file with the Department of City Planning, 450 McAllister St., 5th Floor, 94102.

11. DKS Associates field survey, May 9, 1984 (4-6 PM).

12. Barbara Winter, San Francisco Police Department Traffic Statistics Analysis, telephone conversation, December 11, 1984.

13. The San Francisco Traffic Code maintains that to warrant a signaled pedestrian crossing there must be at least 150 pedestrian crossings per hour, an approach volume (in one direction) of 600 vehicles per hour, and the proposed crossing must be at least 150 ft. distant from the nearest regulated intersection.

E. Land Use and Zoning

The proposed Health and Recreation Center would involve all of Assessor's Block 1144, except a portion of the southern edge of the block containing residential units. The project would require demolition of Loyola Hall (91,000 sq. ft.) and partial demolition and rehabilitation of Loyola Gym (12,400 sq. ft.). The proposed Recreation Center would be constructed in the area vacated by Loyola Hall and would incorporate the remaining portion

(about 11,000 sq. ft.) of Loyola Gym. Administrative offices and classrooms presently occupying Loyola Hall would be relocated on the USF campus. The existing soccer field would be shifted approximately 10 ft. to the west. Existing spectator stands would be moved to the east side of the field (adjacent to Parker Ave.), and a press box and public restrooms would be incorporated into the stands.

The project would increase the density of development on the site, adding about 30,000 net new sq. ft. of development, but would not alter the character of the site. The relationship of the site to the neighborhood as part of a University in a residential setting would not be altered. All portions of the Recreation Center and the press box on the soccer field would be within the limits of the 40-X and 80-D Height and Bulk Districts. The parking spaces currently at three locations on the Health and Recreation Center site would be consolidated at the existing parking lot on Turk St. to provide 172 spaces. This would require 60 ft. to be added to the southern edge of the existing Turk St. parking lot.

The proposed Cogeneration System would be located under the existing Gleeson Library, where the existing Campus heating system is located, and would not represent a change in land use. Because the University has downgraded the size of the proposed facility and would only be selling about 5% of the power generated by the system, thus no longer principally deriving profit from the sale of power, the Cogeneration System would be regarded as an accessory use under Section 204.2 of the Planning Code.

F. Visual Quality

New Construction

The Recreation Center would be constructed along the western portion of Block 1144, parallel to Stanyan St.. Recreation Center buildings would extend further north along the Stanyan St. frontage than Loyola Hall now does and would be an average of 20 ft. lower in height than Loyola Hall. The proposed Multi-Purpose Court Building, Natatorium and Racquetball Court Building would each be set back, at ground level, from the Stanyan St. sidewalk.

Trees and shrubs planted in the areas created by the setbacks (which would vary in depth from three to 30 feet) and in front of the west facing galleria would provide shade and reduce glare from the reflection of sunlight off west facing glass. Since glass used for the Recreation Center would be nonreflective and west facing panes would be angled to face northwest and southwest rather than directly at Stanyan St. glare would be further reduced.

The facades of the Multi-Purpose and Racquetball Court buildings would be articulated using a variety of building material textures, colors and configurations that would create an exterior rhythm intended by the project architect to be consistent with the small scale residential development directly across from the site on Stanyan St. Although the Recreation Center building's facade would be staggered, the Center as a whole would reflect more contemporary design differing from the surrounding older structures.

Nightime lighting from the the glassed, enclosed portions of the proposed Health and Recreation Center and from the existing light standards on the

soccer field would be visible off-site. Trees and shrubs along the galleria frontage on Stanyan St. would act to diffuse light emanating from the project, however, glass roofed portions of the structure would be visible at a distance when fully lit. Light standards on the west side of the soccer field would be moved eastward approximately ten feet. Light intensity and illumination during evening events on the soccer field would remain at existing levels.

Views

The topography of the area surrounding the Health and Recreation Center site influences many of the views the neighboring homes have of the City and of the local neighborhood. Long range views of downtown San Francisco are obstructed by higher ground to the east of the site and would not be affected by the projects. Views to the north, west and south would not be obstructed by the proposed project because homes that look out through those view corridors are generally higher in elevation than the buildings proposed for the Stanyan St. frontage. In addition, proposed construction on the Health and Recreation Center site would replace Loyola Hall and result in a net decrease in height of about 20 ft. and reduction of existing view blockage (see Figure 16, p. 84).

Short range views of the Ignatius Heights area from the homes immediately west of the Health and Recreation Center site (along Stanyan St.) would be dominated by the proposed Recreation Center. The Multi-Purpose Courts Building would be lower than Loyola Hall but would occupy the open area presently covered by a 48-space parking lot surrounded by a 15 ft. high hedge at the corner of Turk and Stanyan Sts. This portion of the Recreation

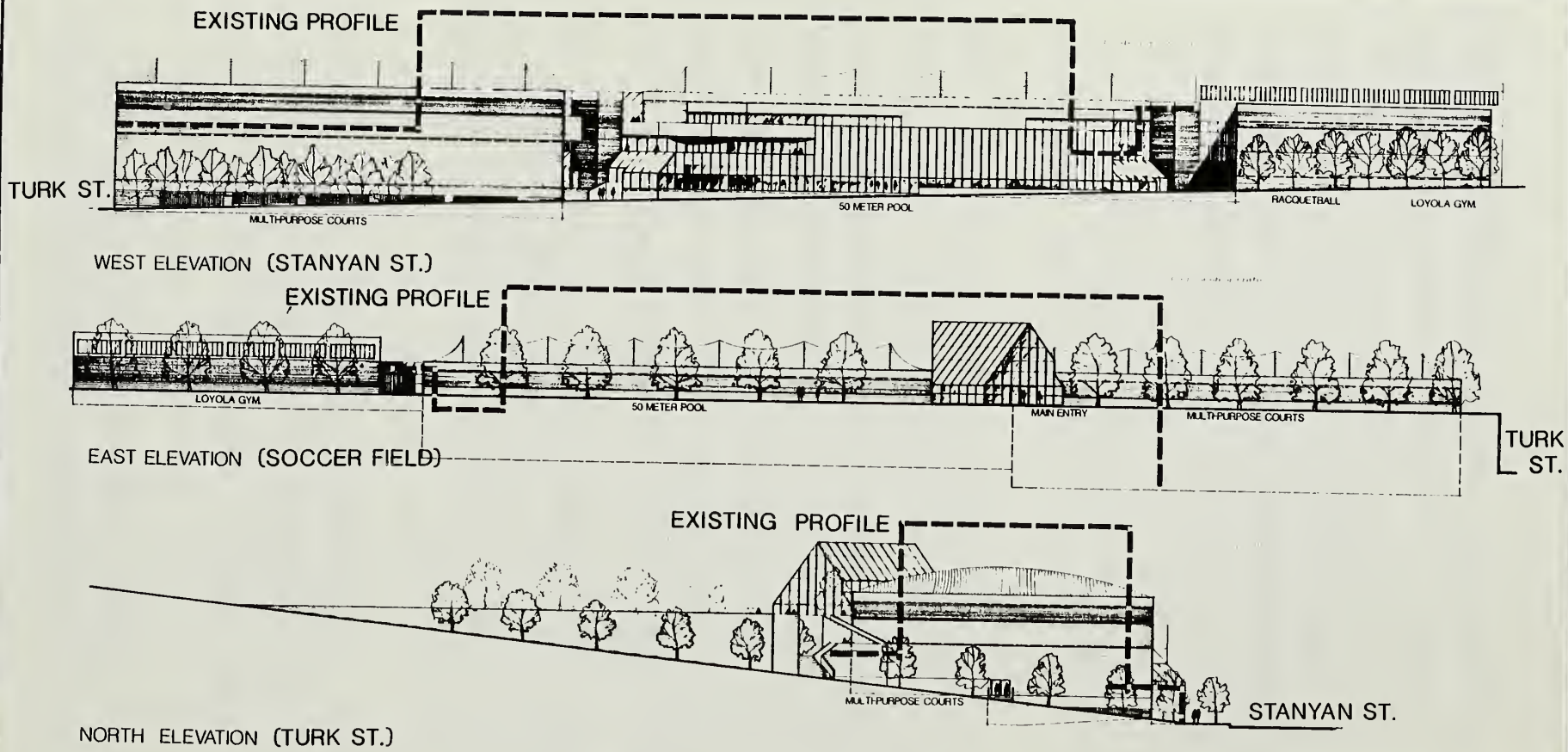
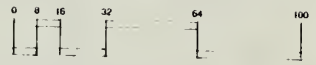


FIGURE 16

COMPARISON OF EXISTING AND PROJECT ELEVATIONS

USF HEALTH AND RECREATION CENTER

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects



Scale: 1"=64'

Center would represent a net increase in height and bulk for the site and would dominate short range views from homes in the immediate vicinity of the Turk and Stanyan Sts. intersection.

Portions of the proposed Cogeneration System which would be exterior to Gleeson Library would be the exhaust stack and a heat radiator, however, the cogenerator exhaust stack would be fully contained in an existing stack and would not constitute a change in visual impact. Viewed from a distance, the heat radiator unit would obscure an 11 ft. x 9 ft. area of space underneath an existing canopy atop the library roof and would not be likely to affect views from the surrounding area.

Cumulative View Impacts

The potential for cumulative visual impacts would be from the north and northwest where views of the project site would also include St. Mary's proposed medical office building. From the Presidio's Arguello Gate, both buildings would be seen with St. Mary's proposed 11-story North Tower as a backdrop, however they would not affect views of the St. Ignatius Church. From Lincoln Park, over two miles distant, the project sites are hard to distinguish and do not obstruct panoramic views of Lone Mountain, St. Ignatius, Golden Gate Park, and Mt. Sutro.

G. Hazards

Natural gas fuel would be used by the proposed Cogeneration System but not stored on site. Based on the past 25 years of operation, potential leaks or fires associated with either the use of natural gas or storage of stand-by fuel oil used for the boilers would be expected to be minimal.[1]

Safety measures currently followed at the main USF boiler plant would be incorporated into the proposed Cogeneration System project. Additional health and safety measures would include gas detection devices which would sense gas leakage, automatically trigger an alarm and shut off the gas supply to the Cogeneration System and the existing boilers. If equipment malfunctioned, fuel supply would be automatically shut off and power output would disconnect from the PG&E grid.

Facility operators would be trained to handle chlorine and other chemicals (including sulfuric acid and sodium hydroxide) which would be stored for use in boiler feedwater and in swimming pool water purification. The chemicals would be stored according to Cal-OSHA regulations.[2] Based on the accident-free past 25 years of handling chemicals used by the boiler system, the potential for chemical accidents would be expected to be minimal.[1]

The proposed Cogeneration System would comply with applicable requirements of Cal-OSHA, including worker, equipment and building safety regulations. The transformer used to replace the three existing ones in the electrical system would not contain polychlorinated biphenyls (PCBs), preventing the risk of PCB contamination in the event of a transformer failure.

Fire Safety

The San Francisco Fire Department does not expect either the Cogeneration System or the Health and Recreation Center to present any unusual fire hazards.[3] The nearest fire stations would be Station 21 on Grove St., nine blocks from the project site, and Station 12 on Stanyan St., ten blocks from the project site. Fire Department normal response time would be approximately three minutes.

Fire safety equipment and procedures at the proposed Cogeneration System would comply with the San Francisco Fire Code. A failsafe, continually self-checking, automatic fire suppression/detection system would be installed at the facility. The system would detect heat level changes in the facility, automatically shut down the gas engine, and discharge a fire suppressant should there be a fire within the engine enclosure or elsewhere in the Cogeneration System enclosure. A portable fire extinguisher would be used to put out small fires before the automatic system was triggered. No smoking would be allowed in the facility and storage of combustibles (paper, etc.) would be forbidden near all equipment.

Construction Safety

Trenches would have to be dug on campus for underground pipes and conduits. Trenches would be protected by barricades or handrails and would be covered with steel plates or bridges at pedestrian crossings. Trenching and excavation procedures would comply with applicable Cal-OSHA regulations.

NOTES - Hazards

1. Harold Hansen, Plant Engineer, phone conversation, 26 October 1983.
2. State of California Occupational Safety and Health Act, Labor Code, §6300-6708; Health and Safety Code, §18947.
3. Lt. Norman Silva, San Francisco Fire Department, meeting, September 14, 1983.

H. Growth Inducement

The environmental effects of growth inducement are indirect. In order for a proposed project to affect the environment in this way, it would first have to cause other development which would not have occurred otherwise.

That other development would have the environmental effects in question. Any analysis of this chain of events can only be very general because of the speculative nature of the amount and type of development that might be induced.

The USF recreation center would be designed to be an intramural facility with small audience accomodations; therefore, it is expected to be used only by students and faculty of the college and by a small number of alumni and neighborhood residents. It would be part of a program to retain existing levels of student enrollment, rather than a drawing card to increase enrollment to higher levels, thus it would not serve to create new demand for dormitory, classroom, or other academic facility construction, nor for off campus development.

The proposed Cogeneration System would be a replacement facility for an aging steam plant while also supplying electricity principally for the University's needs and would not serve to induce additional development on or off campus.

CHAPTER V. MITIGATION MEASURES

In the course of planning and design, measures have been identified which would reduce or eliminate potential environmental impacts of the proposed projects. Some of these measures have been or would be adopted by the project sponsor, architect or contractors, and some are still under consideration by project sponsor.

A. Air Quality

Measures Proposed as Part of the Project

° In order to reduce dust and potential spillage of debris onto the streets, the contractors would be required to sprinkle the excavation area with water twice daily and sprinkle all truck loads of excavated materials being carried away from the site.

° Earthmoving construction activities would be suspended to reduce dust during periods of high wind.

° To minimize the impact of exhaust emissions on the people in the vicinity of the Cogeneration System, the project sponsor would have the top of the Cogeneration System exhaust stack narrowed to increase emission velocity and thus the extent of the dispersion.

B. Noise

Measures Proposed as Part of the Project

° The heat radiator unit of the Cogeneration System would be encased within a noise insulating enclosure that would reduce noise to levels at or below

the respective daytime and nighttime ambient levels.

° The fan in the heat radiator unit would be run at low-speed during the night to reduce noise generated by the radiator to a level below that which would potentially cause sleep disturbance for the residents of the homes nearest the Gleeson Library site.

° The intake and outlet of the System would be equipped with silencing devices to reduce noise levels measured at the nearest homes.

° The Cogeneration System would be installed in a basement, which would reduce noise levels emitted from the System to the environment.

° The Cogeneration System would be enclosed in an acoustically treated shell to reduce noise to levels currently existing inside the Steam Plant.

° Soundproofing of the Steam Plant would include acoustic tiles or padding on the walls and air intake and exhaust pipe sound traps to reduce noise levels to 50 dBA just outside the basement walls.

° Insofar as feasible, major equipment would undergo initial testing with all acoustically mitigating auxiliary equipment in place to reduce noise impacts during equipment installation and system start-up.

° Whenever possible, existing parking lots and Negoesco Soccer Field (rather than the streets along the project site) would be used as the location for contractor's equipment and would function as the project staging area, since their greater distance from nearby residences would provide some noise attenuation.

° The construction contract would include a requirement that the contractor not exceed equipment noise limits stated in the City Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

° All construction would take place between 8:00 AM and 5:00 PM and would be restricted to weekdays; this would eliminate construction noise impacts

on residents of nearby homes during the times that they would most likely be home.

° A wooden barrier would be placed around the project sites, across from homes, to help muffle construction noise.

C. Transportation, Circulation and Parking

Measures Proposed as Part of the Project

° The general contractor for the project would meet with the Department of Public Works to establish construction vehicle routes that would minimize impacts to residents and businesses in the vicinity of the project site.

° Construction workers would park their commute vehicles on site and not on surrounding streets.

° To alleviate possible automobile and pedestrian traffic impacts on Stanyan St., the parking lot and building entrances and non-emergency exits would be placed on the east side of the Recreation Center.

° Project sponsor would install bicycle storage facilities for those persons that would use bicycles as a mode of transportation.

° USF would continue to encourage public transit use by users of the proposed Recreation Center by providing transit maps and information in appropriate locations and through the sale of MUNI Fast Passes on campus.

° USF would re-engineer and restripe campus parking lots to provide an additional 108 spaces of parking. The majority of the new spaces would be located on Lone Mountain.

° USF would designate preferential carpool spaces in the project parking lot to encourage carpooling as a means of commuting.

° The University would participate in the Vista Bus system to bring students, faculty and staff to its campus, thereby allowing those students,

faculty and staff that commute from San Mateo County the option of using public transit rather than their personal automobiles.

D. Visual Quality

Measures Proposed as Part of the Project

° The project site would be landscaped to delineate circulation paths, buffer views of the proposed Health and Recreation Center development and to minimize the institutional appearance of the project.

° Evergreen landscaping would screen exposed glass surfaces such as the Recreation Center entrance atrium and galleria to reduce glare from glass surfaces.

° Insofar as possible, west facing glass would be angled northwest to reduce glare directly across Stanyan St.

° Non-reflective glass would be used for the Recreation Center atria and galleria.

° The Cogeneration System would be underground in an existing building, to avoid an industrial looking visual impact.

E. Hazards

Measures Proposed as Part of the Project

° No smoking would be allowed in the cogeneration facility and storage of combustibles (paper, etc.) would be forbidden near all equipment.

° Cogeneration equipment would be installed in compliance with the National Fire Protection Association (NFPA) recommended "Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 37.

° Existing PCB-containing electrical transformers would be replaced with

new transformers not containing PCBs.

F. Historic, Architectural, and Cultural Measures

Measure Proposed as Part of the Project

° Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer and the President of the Landmarks Preservation Advisory Board would be immediately notified. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The Environmental Review Officer would then recommend specific mitigation measures, if necessary, and recommendations would be sent to the State Office of Historic Preservation. Excavation or construction which might damage the discovered cultural resources would be suspended for a maximum of four weeks to permit inspection, recommendation and retrieval, if appropriate.

G. Geology/Topography

Measure Proposed as Part of the Project

° Project design would follow and emphasize existing topography to minimize the amount of grading required.

CHAPTER VI. SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

The following are expected significant impacts subject to final determination by the City Planning Commission as part of its certification process and in accordance with section 21067 of the California Environmental Quality Act (CEQA). Chapter VI of the Final EIR will be revised, if necessary, to reflect the Commission's findings.

This chapter identifies significant environmental impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or other mitigation measures that could be implemented, as described in Chapter V., Mitigation Measures (pp. 88 to 92).

It is not expected that the proposed Health and Recreation Center and the proposed Cogeneration System would result in any significant unavoidable adverse environmental effects.

CHAPTER VII. ALTERNATIVES

This report discusses two separate projects that, for planning purposes, have been analyzed in the same document. Neither of the projects is dependent upon the other and the two may, or may not, be built at the same time. Project alternatives are discussed in a similar manner. There are three alternatives to the proposed Health and Recreation project: a Health and Recreation Center Built at Ulrich Field (Alt.1), a Health and Recreation Center Located in the Existing Loyola Hall Building (Alt.2), and a No-Project Alternative (Alt.3). There are four alternatives for the Cogeneration System being proposed: a 9.5 mW Cogeneration Plant (Alt.4), Alternate Cogeneration Fuels (Alt.5), Alternate Energy Sources (Alt.6), and a No-Project Alternative (Alt.7). Each alternative is discussed separately. If any of the Recreation Center alternatives were built at the same time as any of the Cogeneration System alternatives, their impacts would be additive.

Alternative 1.
Health and Recreation Center at Ulrich Field

Alternative 1 proposes the construction of the Health and Recreation Center at Ulrich Field at the corner of Golden Gate and Masonic Aves. (see Figure 17, p. 95). Hayes-Healy Hall is to the west of this site and residential units surround the site on the other three sides. The Alternative 1 site is on Lot 1 of Assessor's Block 1145 and is currently a baseball field approximately 450 ft. x 350 ft. (157,500 sq. ft.). This was the original site for the Health and Recreation Center as identified in the March, 1979,

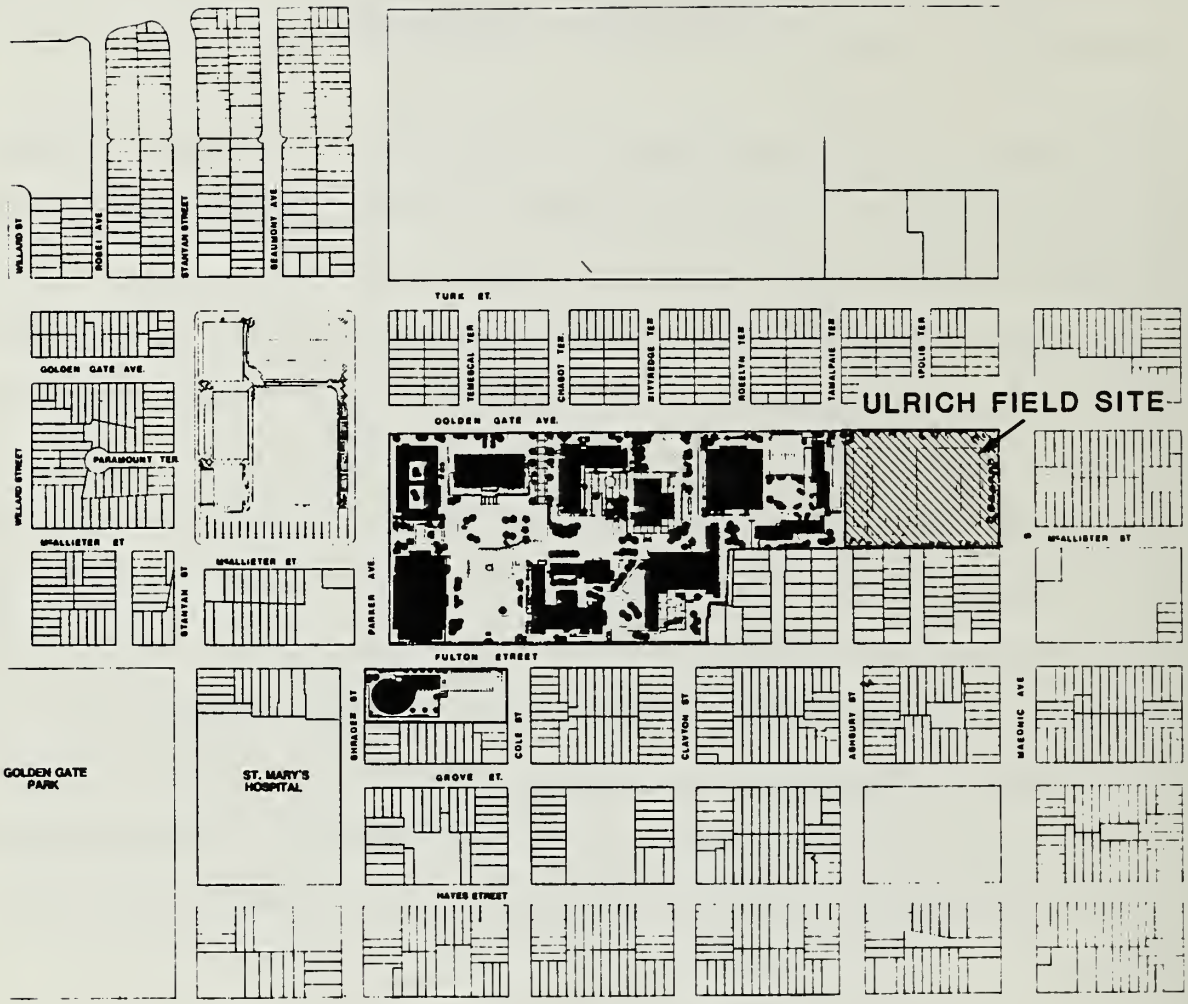


FIGURE 17

ULRICH FIELD ALTERNATE SITE

USF HEALTH AND RECREATION CENTER

N

ALTERNATE SITE

SCALE: 1" = 500'

SOURCE: Bendix Environmental Research, Inc. and Pflueger Architects

USF Institutional Master Plan.

In this alternative a swimming pool building (57,000 sq. ft.) would be located in the southwest corner of the site. A sundeck would be on the south side of the pool. The remainder of the Recreation Center (160,000 sq. ft.) would be set 10 ft. underground and would rise about 30 ft. above ground. The partially underground facility would contain a Multi-Purpose Gym, handball and squash courts, a fencing, dancing and gymnastics area, an exercise room, a hobby area, a lounge area and office space. It would be designed in units so that it could be constructed in phases, as funding permits. A parking lot, galleria and atria would not be included in this project because this Alternative would be more costly than the proposed project.

The baseball field now occupying the site would be displaced and could not be relocated on any other available parcel on University property and still remain regulation size. Loyola Hall and Loyola Gym would remain in their present condition. The Negoesco Soccer Field would not be upgraded as in the proposed project. The parking lots at the Loyola site would remain in their present condition.

Construction impacts would be different from those of the proposed project. No building demolition would occur for this alternative, but a greater amount of material would have to be excavated for the Recreation Center. This would increase construction transportation impacts, but construction noise impacts would be about the same as those for the proposed Recreation Center.

Project-related hazards, air quality and noise impacts of Alternative 1 would be similar to those of the proposed Health and Recreation Center.

Visual, land use, transportation and energy impacts of the Alternative 1 Recreation Center would be greater than those of the proposed project. The Recreation Center would be about 30 ft. above street level, which would block views for the nearby residents on Golden Gate and Masonic Aves. This alternative would increase the amount of traffic on Masonic and Golden Gate Aves. caused by persons searching for on-street parking. Replacement of the baseball field with an enclosed structure would increase the density of development on the site and put additional pressure on the University's few remaining open space recreational facilities. Energy impacts would be greater as well, because passive solar heating would not be included in this alternative. This would result in greater use of steam for space heating at the Recreation Center.

The project sponsor has rejected this alternative based on the increased visual, land use, transportation and energy impacts associated with the project at this location.

Alternative 2.
Conversion of Loyola Hall Into Recreation Center

The project sponsor explored the possibility of an alternative that would involve the conversion of Loyola Hall to serve the functions of the Multi-Purpose Courts, the Pool and Racquetball buildings of the proposed Recreation Center. Construction impacts would be less than those of the proposed project as Alternative 2 would not involve complete demolition of one building and erection of a new one. Operational impacts associated with this Alternative would be similar to those associated with the proposed project.

The project sponsor rejected this alternative, however, because Loyola Hall has an interior design that could not be used as a recreation center. The building interior would have to be completely gutted and structurally reinforced, retaining only the building skin. The spacing of the columns, together with the floor to ceiling height is too constrictive for use as a multi-court space or as a pool. The cost of this Alternative would be more than that for the proposed project.

Alternative 3.
Health and Recreation Center Not Built

Alternative 3 describes the situation that would occur if the Recreation Center were not built. Loyola Hall, Loyola Gym, Negoesco Soccer Field and the three parking lots on the proposed Health and Recreation Center site would remain in their present condition. (The feasibility of the Cogeneration System and the impacts associated with alternative Cogeneration System sites would not be affected by a decision against building the Recreation Center.)

USF would depend on Memorial Gym, Loyola Gym and Ulrich Field for its recreational activities. The overcrowding of recreational facilities in Loyola and Memorial Gyms would continue. A recreational facility would not be available for community use. USF would continue to use City swimming pools for physical education classes. The University would have to use other campus facilities for their University and Alumni Clubs. Declining enrollment at USF has been attributed, in part, to a lack of recreational facilities and would continue if the proposed Recreation Center were not built. Noise, traffic, land use, visual, hazard and construction impacts associated with the proposed Health and Recreation Center would not occur.

The project sponsor has rejected this alternative because it does not meet its objective to provide the University with recreational facilities beyond those presently available and to make use of the Loyola Hall site.

Alternative 4.
9.5 mW Cogeneration Facility

As a result of independent energy studies performed for the University, the project sponsor explored the possibility of a 9.5 mW Cogeneration Facility that would supply USF with steam, not only to meet the present and projected needs, but also enough to sell to St. Mary's Hospital. All of the electrical power produced by the Cogeneration Facility would be sold to PG&E in accordance with PURPA, but only a small portion would be bought back for the University's own use, thereby allowing the Cogeneration Facility to be a net revenue producing operation for USF. This alternative could be located at four different sites as listed below (see Figure 18, p. 100). Construction impacts of this alternative would be greater than those for the 1.8 mW system proposed for installation into the existing steam plant beneath Gleeson Library. Operational impacts such as noise and air quality effects would likely be greater for this alternative. Emission of pollutants such as NO_x and sulfur dioxides would be greater principally because of the size of the facility and the possible use of standby fuel oil for short periods of time. Some of the alternatives would be partially above ground and would therefore constitute substantive visual impacts. All of these sub-alternatives could be constructed independently of the proposed Health and Recreation Center. A brief description of each sub-alternative follows.

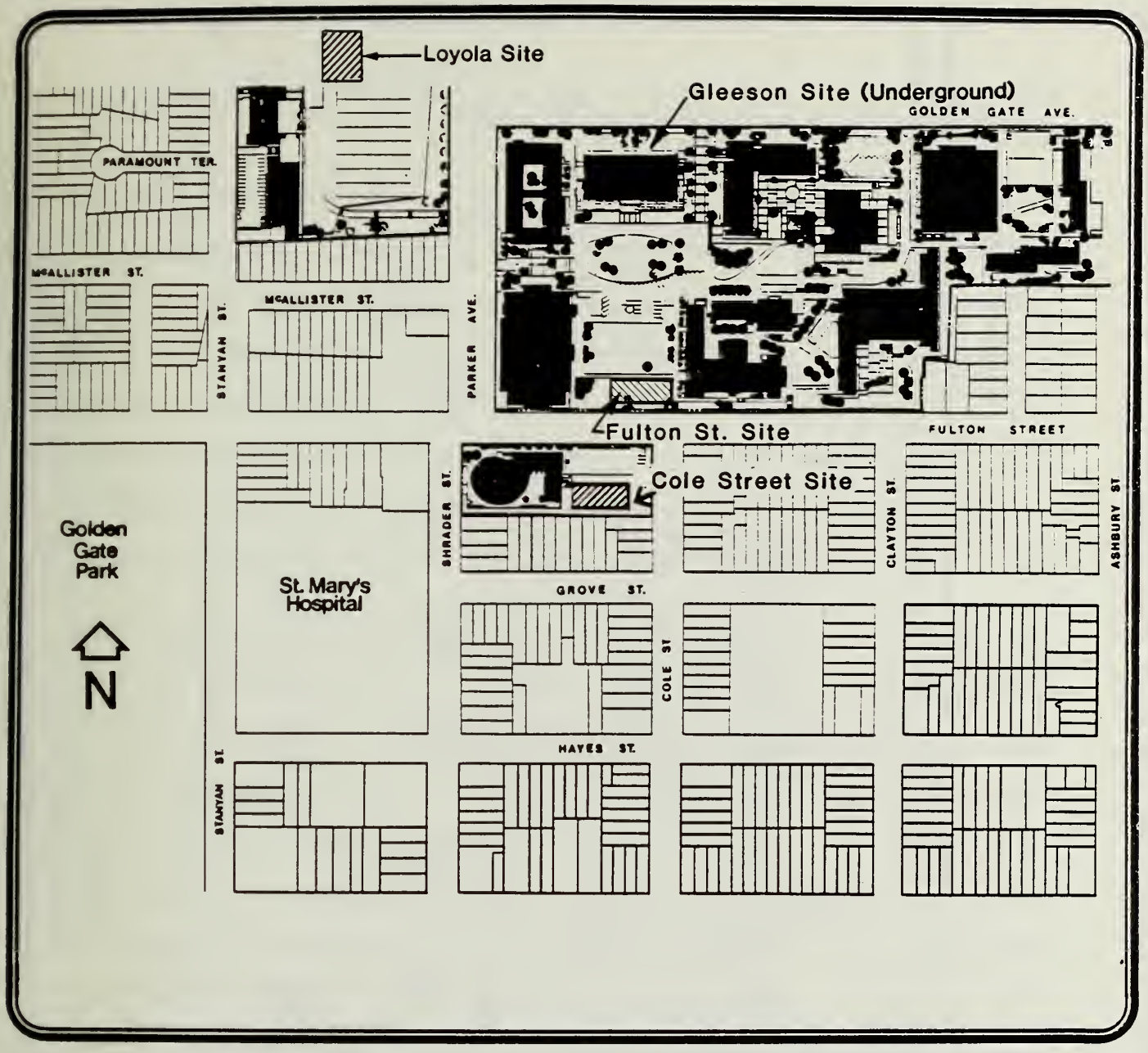


FIGURE 18

ALTERNATE COGENERATION FACILITY SITES

Scale: 1"=350'

ALTERNATE SITES

USF COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

Alternative 4a.
9.5 mW Cogeneration Facility at Cole St. Site

This alternative proposes construction of a 9.5 mW Cogeneration Facility between the Kendrick Hall Addition and Cole St., in Lot 1, Assessor's Block 1190 (See Figure 19, p. 102). The actual structure itself would cover about 7,200 sq. ft.. The cogeneration building would be approximately 60 ft. x 120 ft. x 26 ft., with the southeastern third of the building stepping down from 26 ft. to 16 ft. in height toward Cole St. This site is currently an unmaintained, unimproved area, dominated by a single, steep, southwest-facing slope. Several native Cypress and Juniper trees grow on this slope.

The Cole St. building would be built into the slope east of Kendrick Hall Addition (see Figure 20, p. 103). The exterior of the structure would be textured, colored concrete and would be landscaped with trees and vines to integrate the facility with the site. A 4,500 sq. ft. pedestrian plaza would be created on top of the upper level of the facility (five ft. below Fulton St.) and would be available for student and public use. An existing parking lot bordering the northern edge of this alternative site would remain, as would about 11,000 sq. ft. of open space to the east of the site. An existing stairwell would provide access from the pedestrian plaza to the lower levels of the parking garage under Kendrick Hall to the west. A ramp would connect the pedestrian plaza to the first floor of Kendrick Hall Addition. The plaza and adjacent open area would both be landscaped. This alternative would be 30 ft. from the nearest residences along Grove St.

Access to the building would be provided by a service door on the eastern side of the structure. An existing service drive would be extended to connect this entrance to Cole St. The service drive would be used during

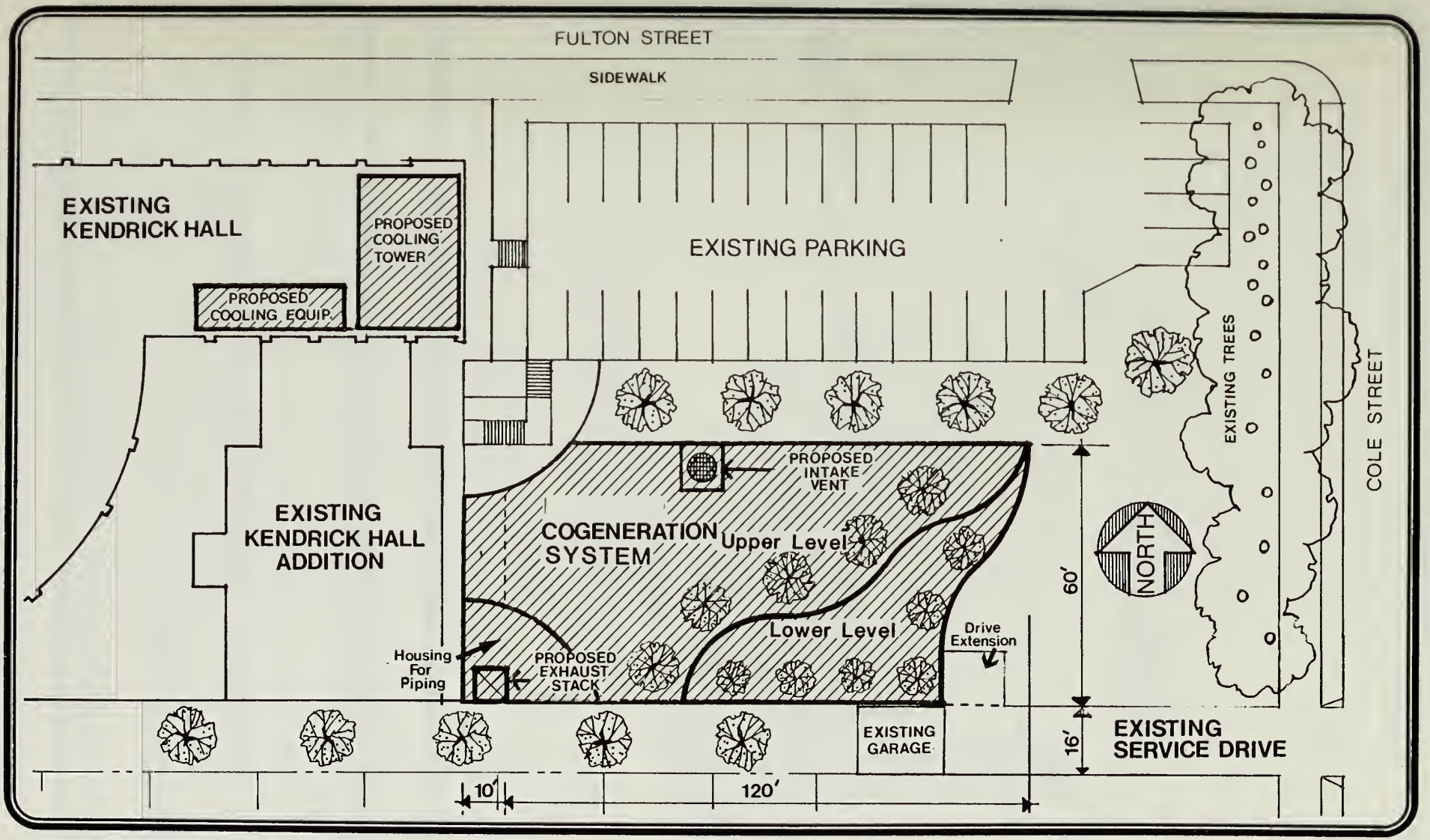


FIGURE 19

SCALE: 1/32" = 1'0"

COLE ST. ALTERNATE SITE PLAN

USF COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

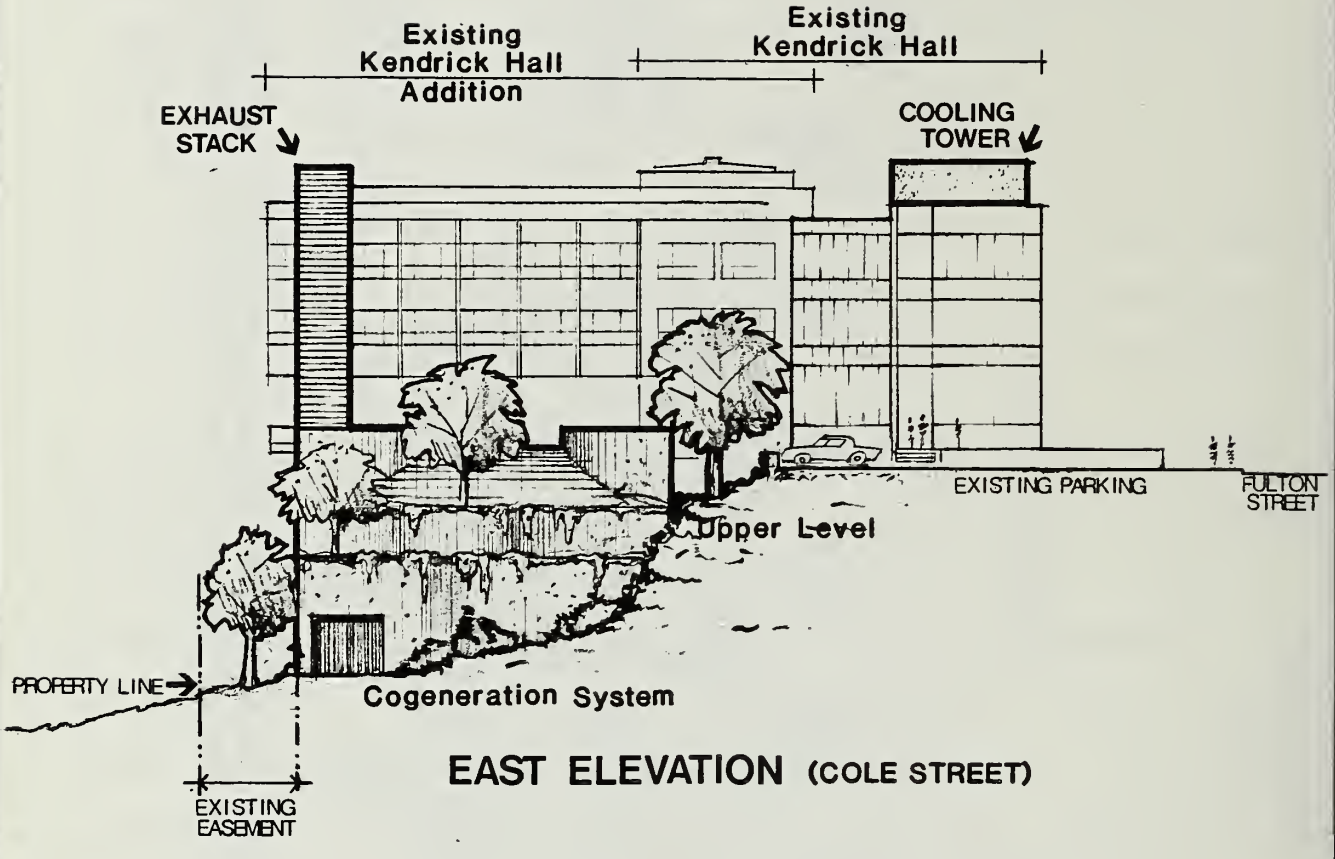


FIGURE 20 SCALE: 1/32" = 1'0"

COLE ST. ALTERNATE SITE EAST ELEVATION — PROPOSED PROJECT OUTLINE

USF COGENERATION SYSTEM

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

the day as a truck loading space and at night as a parking space for the night operator.

An 80 ft. tall exhaust stack (as measured from the ground on the southeast side of the Kendrick Hall Addition) would be located on the southwest corner of the facility's roof and would rise about 10 ft. above the roof of the adjoining Kendrick Hall Addition. Material and finish of the exhaust stack would be selected to blend with that of Kendrick Hall and Kendrick Hall Addition and thus minimize visual impact.

A cooling tower (24 ft. x 22 ft. x 13 ft.) would be located on the roof of Kendrick Hall. The tower would be oriented to the prevailing winds to maximize efficiency in dispersing air emissions. A base surrounding the tower would contain potential spill from the cooling tower.

Alternative 4b.
9.5 mW Cogeneration Facility at Gleeson Site

In this Alternative, a Cogeneration Facility would be located in the basement of the planned Gleeson Library Addition. This Library Addition is different from the existing Gleeson Library basement as described for the proposed project. The library addition site proposed in the USF Institutional Master Plan Supplement, May 1983, would be on Assessor's Block 1145, north of Gleeson Library. The site is bordered by Golden Gate Ave. to the north and by Xavier Hall to the west (see Figures 21 and 22, pp. 105 and 106); it is currently used for student and faculty parking. The potential library addition is currently in early planning stages and construction would not be anticipated to begin before early 1996. The Cogeneration Facility would be structurally designed to support future construction of the library addition above it.

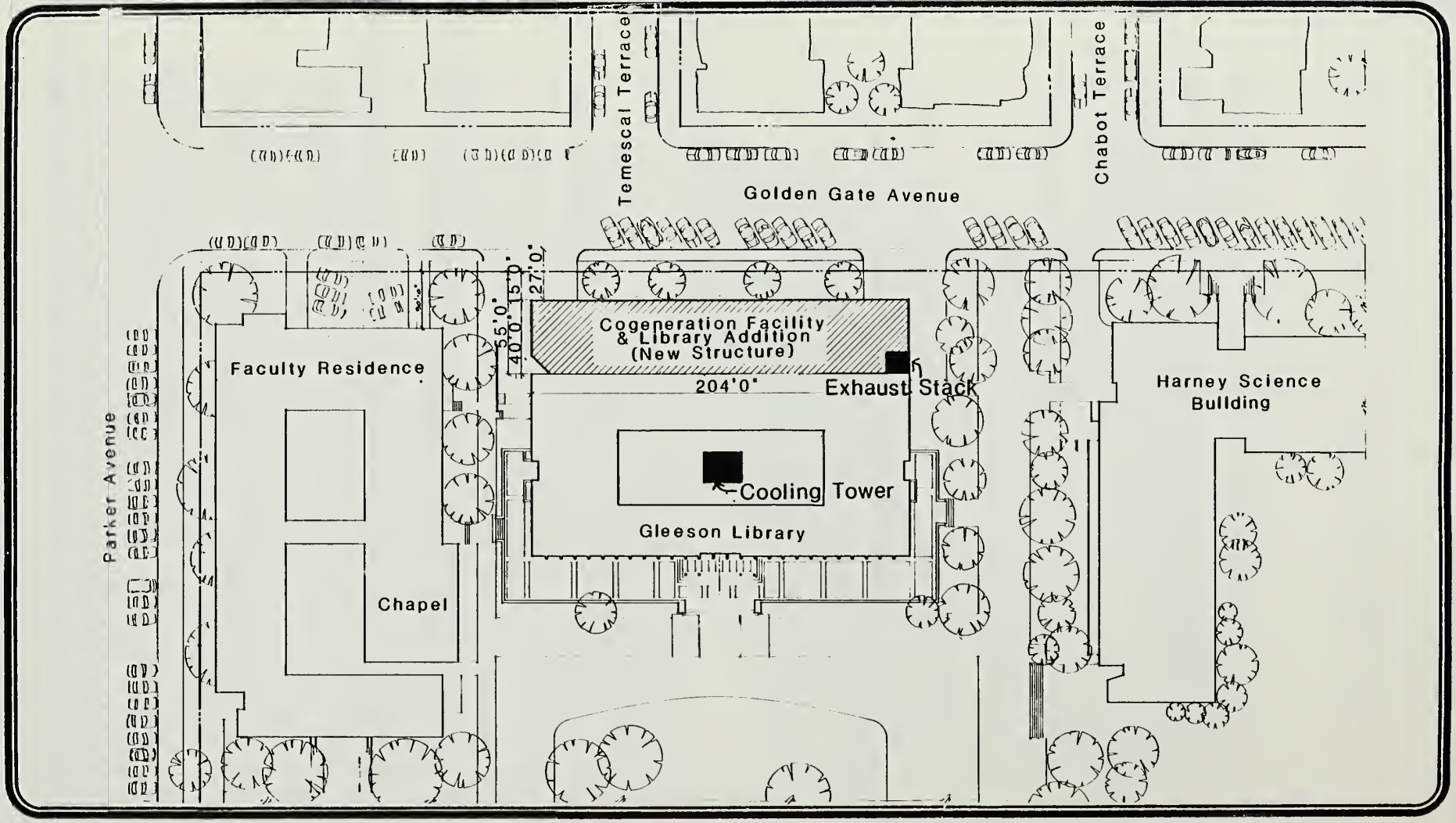


FIGURE 21

GLEESON LIBRARY ADDITION ALTERNATE SITE PLAN

USF COGENERATION SYSTEM

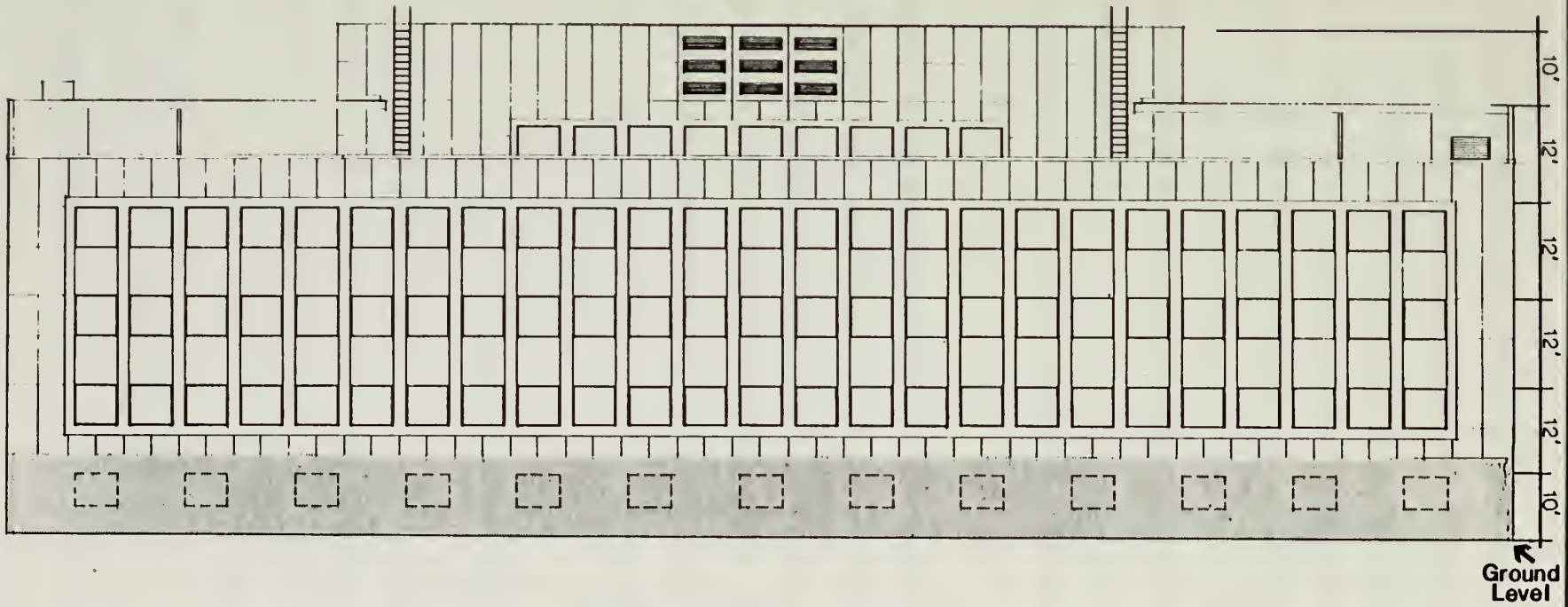
Source: Bendix Environmental Research, Inc. and Pflueger Architects

SCALE: 1" = 80'

PROJECT SITE

PROPERTY LINE

N



GOLDEN GATE AVE. ELEVATION

FIGURE 22

GLEESON LIBRARY ADDITION ALTERNATE SITE

USF COGENERATION SYSTEM

Source: Bendix Environmental Research, Inc. and Pflueger Architects

SCALE: 1" = 20'

PROPOSED PROJECT LOCATION

Prior to construction of the library addition, the Alternatives 4b Cogeneration Facility would have approximate dimensions of 200 ft. x 40 ft. x 23 ft. Internal volume would be similar to Alternative 4a. The structure would be set eight ft. below surface level, extending 15 ft. above the ground. A cooling tower (24 ft. x 22 ft. x 13 ft.) would be located on the penthouse floor of the adjoining 68 ft. tall Gleeson Library to the south. The exhaust stack would be located at the northeast corner of Gleeson Library and would be approximately 80 ft. above ground level and 12 ft. taller than Gleeson Library. The facility would be set back 10 ft. from Golden Gate Ave.

The Gleeson Memorial Library Addition would probably be a four-story building with approximate dimensions of 200 ft. x 40 ft. x 60 ft. (extending about 45 ft. above the Cogeneration Facility). The cogeneration plant would occupy the basement of this structure. (Should USF decide to build the library addition, it would be subject to independent environmental evaluation prior to construction.)

Alternative 4c.
9.5 mW Cogeneration Facility at Fulton Site

This Cogeneration Facility Alternative would be located on Fulton St. approximately 40 ft. west of Campion Hall, 90 ft. east of St. Ignatius Church, and 10 ft. north of the USF property line on Fulton St., in Lot 1 of Assessor's Block 1145. The Fulton St. site is a level, grassy field next to the east facing slope of Fulton St. The southern boundary of the site is a retaining wall which drops down approximately 10 ft. to the Fulton St. sidewalk. This alternative site contains three mature trees; one Araucaria and two holly trees.

A 50,000 sq. ft. administration building was proposed for this site in the 1979 USF Institutional Master Plan; construction would not be anticipated before 1990. The administration building could be built above the cogeneration facility. The foundation for the Cogeneration Facility would be designed to support further construction. The horizontal dimensions of the Fulton St. Cogeneration Facility building would be the same as for Alternative 4a. A plaza or roof deck would be built on the top of the facility, 20 ft. above Fulton St., and would be removed at the time of administration building construction, should it occur. (The administration building would be subject to independent environmental evaluation prior to construction.)

The Fulton St. Cogeneration Facility would be set approximately 10 ft. underground, extending 10 ft. above ground. The roof of the cogeneration building would be 20 ft. above Fulton St. A 13 ft. tall cooling tower would be located on a portion of the cogeneration building roof. The combined height of the cooling tower and cogeneration building would measure about 23 ft. above ground level and 28 ft. above Fulton St. If the proposed administration building were completed, the cooling tower would be moved to the roof of the administration building. The cogeneration building would then constitute the basement of the administration building. An exhaust stack would be on the east end of the facility, approximately 50 ft. from Campion Hall. The exhaust stack height would be approximately 75 ft. above Fulton St., extending 12 ft. above Campion Hall.

Alternative 4d.
9.5 mW Cogeneration Facility at Loyola Site

This alternative proposes a 9.5 mW Cogeneration Facility located under the west end of the parking lot at Turk St. and Parker Ave. adjacent to the

proposed site for the Health and Recreation Center. The Cogeneration Facility would be completely separate from the Health and Recreation Center buildings and could be built independently of that complex. The facility would be underground, except for an entrance on Turk St., two five ft. tall, 13 ft. diameter ceramic cooling towers, two air intake stacks (28 ft. and 8 ft. tall) and a 40 ft. tall exhaust stack. The cooling towers, intake stacks and exhaust stack would be located in a row on the west edge of the parking lot (see Figure 11, p. 39). The proposed Cogeneration Facility would be a 7,200 sq. ft. reinforced concrete building with a volume of 160,000 cu. ft.

This site was not identified as an alternative site for a Cogeneration Facility in the May 1979 USF Master Plan or the February 1983 Master Plan Supplement. In order for USF to apply for the Conditional Use Authorization necessary for construction of this Alternative, the filing of an Amendment to its Master Plan would be required.

The project sponsor has rejected a 9.5 mW Cogeneration Facility proposal at all of the aforementioned sites principally due to both neighborhood and University concern over the magnitude of the Facility and doubts as to whether a Cogeneration Facility of this size would be an appropriate use in the predominantly residential area. Reasons for rejection of this alternative by the University are: operational impacts (noise and air quality), visual considerations, and construction related traffic and noise impacts.

Alternative 5. Alternate Energy Sources

Alternative 5a. Photovoltaic Cells

This alternative would supply electricity to the USF campus using photovoltaic cells and would include the possible sale of electricity to PG&E. A photovoltaic cell converts light energy to electrical energy. Individual cells are grouped in panels which are exposed to sunlight; an electric current is generated when sunlight strikes the panels. The electricity could be used immediately or stored in batteries.

Alternative 5a. would require a minimum of 560,000 sq. ft. (13 acres) of photovoltaic panels to meet the average daily USF electric demand of 25,000 kWh. The project sponsor has rejected this alternative because of space limitations and cost. USF does not have sufficient open space for the number of panels that would be needed to meet USF electricity demand.

Alternative 5b. Windmills

This alternative would supply the electricity needs of USF by using windmills; excess electricity generated could be sold to PG&E. Wind rotates the blades of the windmill which turn an electric generator. Above a set windspeed the blades rotate at a constant speed and electricity is generated. Windmills must be installed a minimum of 100 ft. from buildings of similar height and 200 ft. from tall trees to work efficiently. Open space areas on the USF campus would have to be selected for the windmills. Initial evaluation indicates that there are not enough open space sites at USF to accommodate the number of windmills that would be needed to meet USF's electricity demand.

The project sponsor has rejected Alternative 5b. on the basis of its land requirement, and neighborhood concern over windmills on the USF campus.

Alternative 6. Alternate Cogeneration Fuels

Alternative 6a. Liquid Fuel

Alternative 6a would be the same as the proposed Cogeneration System except that a liquid fuel, such as #2 diesel or fuel oil, would be burned instead of natural gas. Use of liquid fuel would require installation of a subsurface storage facility. An access lane from the street to the storage facility would be constructed to accommodate tanker trucks.

Energy, land use and visual impacts of Alternative 6a would be the same as those of the proposed Cogeneration System. Construction, hazards, noise, traffic and air quality impacts of Alternative 6a would be greater than those of the proposed Cogeneration System.

Construction impacts would include a greater volume of excavation and longer site preparation and construction time because the fuel storage facility would be larger than that of the proposed project.

The greater hazard risks relate to larger volumes of liquid fuel that would be stored on campus at all times and the tanker trucks that would travel through the neighborhood routinely. Although diesel fuel is not as flammable as natural gas,[1] the possibility of an accident occuring during delivery and storage of fuel would be greater than with the Cogeneration System in which fuel would be delivered through a subsurface gas main. These monthly tanker truck deliveries[2] would also increase traffic and noise impacts in the immediate vicinity of the project.

Alternative 6a would have greater impacts on air quality than the proposed project. Combustion of liquid fuels would generate greater amounts of air pollutants than burning of natural gas: about 1.1 to 1.5 times greater nitrogen oxides (NO_x), approximately 100 times more sulfer dioxide (SO_2) and over 100 time more particulates.[3] The Bay Area Air Quality Management District (BAAQMD) would require low sulfur fuel (0.1% sulfur) to be used to reduce SO_2 emmissions. Availability of 0.1% sulfur fuel is currently unpredictable. Low sulfur fuel is currently more expensive than natural gas.[4]

The project sponsor has rejected Alternative 6a on the basis of its air quality, noise, traffic, hazard, and construction impacts and its cost.

Alternative 6b. Solid Waste Fuel

This alternative would retain most elements of the 9.5 mW Cogeneration Facility (Alt. 4). The same quantities of steam and electricity would be produced for sale. The boiler and turbine generators would be retained but solid waste fuel (Processed campus garbage) would be burned rather than natural gas.

Facilities for storage, processing (shredding and removing non-combustibles) and burning of about 100 tons/day of raw garbage would be constructed in addition to the 9.5 mW Cogeneration Facility. Additional space would also be required to house pollution control equipment. Space requirements for this alternative would require selection of a different, larger project site elsewhere on the USF campus. The four alternative Cogeneration Facility locations (see Alternative 4) would be the largest sites on the USF campus that could house this alternate facility. It would not be known, without a

detailed engineering study, whether these sites could house a solid waste fuel Cogeneration Facility.

This alternative would generate more short-term construction impacts than the proposed Cogeneration System, due to the increased project size and longer construction period. Short-term construction impacts would include traffic, air emissions and noise associated with construction equipment.

Utility impacts of Alternative 6b. would be less than those of the proposed project. Use of solid waste as a fuel would reduce San Francisco's solid waste disposal problem and revenue could be earned by selling salvaged glass and metal (non-combustibles) in addition to steam and electricity.

Energy impacts of this alternative would be less than those of the proposed Cogeneration System. This alternative would use less natural gas than the proposed cogeneration project, as solid wastes would be the primary fuel used.

Land use, transportation, air quality, hazard, and noise impacts of alternative 6b would be greater than those of the proposed Cogenerations System. A greater amount of land would be required for this alternate Facility.

The use of air pollution control devices would result in height and land coverage requirements beyond those of the proposed project; these control devices could be greater than 40 ft. tall. Pollution control technology would increase capital costs more than three-fold.

This alternative facility would generate a greater variety of air pollutants in larger amounts than would the proposed cogeneration project. Air pollutants which would be emitted by a solid waste-fueled facility, but not by a

natural-gas fueled facility, include: non-methane hydrocarbons, hydrochloric acid, heavy metals, polychlorinated biphenyls (PCBs) and possibly dioxins.[5,6] The Bay Area Air Quality Management District would require application of Best Available Control Technology to reduce such emissions. Control technologies which could be required for this alternative include: (1) baghouse scrubbers (particulate removal); (2) spray dryers (sulfur dioxide and hydrochloric acid removal); (3) ammonia injection (nitrogen oxide reduction); (4) calcium hydroxide injection (sulfur dioxide and sulfuric and hydrochloric acid removal); and (5) incineration temperatures of 1800° Fahrenheit or more (PCB and dioxin removal).

Hazard impacts would be greater for Alternative 6b. The odor and rodent hazard associated with storing tons of raw garbage on campus could require mitigation.

Noise impacts generated by this alternative would be greater than the proposed project or Alternative 4. Additional long-term impacts would include noise from truck trips to and from the facility, dumping of waste into storage hoppers, transfer of waste to processing areas, glass and metal separation and fuel shredding prior to combustion.

Transportation impacts would include truck trips (twice weekly) to deliver solid waste to the facility and carry away glass, metal and ash. The project sponsor has rejected this alternative on the basis of its cost and land use, transportation, air quality, hazard, and noise impacts.

Alternative 7.
Cogeneration System Not Built

In this alternative, none of the existing campus boilers would be replaced, and conventional natural gas combustion to produce steam would continue. USF would not produce electricity. The University would continue to use about 988,000 therms/yr. of natural gas as at present. A boiler in the proposed Recreation Center (of a size similar to that of the combined boilers in Loyola Hall and Loyola Gym) would supply that facility with steam. A Recreation Center boiler would produce air emissions similar to existing boilers. Noise generated by a Recreation Center boiler would be inaudible.

Noise, traffic, land use, hazard, and air quality impacts associated with the cogeneration project would not occur. Hazard, noise and air quality impacts generated by the central steam plant and individual building boilers would remain at present levels. University energy costs could not be substantially reduced through further energy conservation measures as all recommendations of the 1979 PG&E Energy Utilization Audit of USF have been implemented.[2]

The project sponsor has rejected this alternative because it fails to meet the sponsor's objectives to (1) partially replace an aging steam plant now in use for campus heating, (2) insulate itself against rising energy costs by reducing energy dependence on public utilities, and (3) minimize depletion of non-renewable fossil fuel through more efficient use of fuel.

Alternative 8.
No Project Alternative

Loyola Hall, Loyola Gym, Negoesco Soccer Field and the three parking lots on the proposed Health and Recreation Center site would remain in their present condition. USF would depend on Memorial Gym, Loyola Gym and Ulrich Field for its recreational activities. A recreational facility would not be available for community use. USF would continue to use City swimming pools for physical education classes. The University would have to use other campus facilities for their University and Alumni Clubs. Declining enrollment at USF has been attributed, in part, to a lack of recreational facilities and would continue if the proposed Recreation Center were not built.

In this alternative, none of the existing campus boilers would be replaced, and conventional natural gas combustion to produce steam would continue. USF would not produce electricity for campus use. The University would continue to use about 988,000 therms/yr. of natural gas as at present.

Noise, air quality, traffic, land use, visual, hazard, and construction impacts would not occur with this alternative.

The project sponsor has rejected this alternative because it does not meet its objective to provide the University with recreational facilities beyond those presently available and to make use of the Loyola Hall site. The University would not meet its objective to partially replace an aging steam plant now in use for campus heating and would not implement the final phase of its energy conservation program thereby minimizing depletion of non-renewable fossile fuel through more efficient use of fuel.

NOTES - Alternatives

1. National Fire Protection Association Standards, 325M, 1977, Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids, p. 130.

2. Harold Hansen, USF Chief Engineer, telephone conversation, 3 November 1983.

3. Primer on Natural Gas and Methane, Report of the Natural Gas and Methane Task Force, Scientists' Institute for Public Information, November, 1979.

4. Wolf, Douglas., Air Quality Engineer, BAAQMD, telephone conversation, 3 November 1983.

5. J. Jahnke, J. Cheney, R. Rollins and C. Fortune, A Research Study of Gaseous Emissions from a Municipal Incinerator, Air Pollution Control Association Journal, v. 27, 1977, p. 747.

6. W. O'Connell, G. Stotler, R. Clark, Emissions and Emission Control in Modern Municipal Incinerators, Proceedings, 10th National Waste Processing Conference, American Society of Mechanical Engineers, 1982, p. 285.

CHAPTER VIII. EIR AUTHORS AND CONSULTANTS

ORGANIZATIONS AND PERSONS CONSULTED

Author of Environmental Impact Report

San Francisco Department of City Planning
450 McAllister Street
San Francisco, CA 94102

Environmental Review Officer: Alec S. Bash

Assistant Environmental Review Officer: Barbara W. Sahm

Project Coordinator: Jonathan Hussey

EIR Consultants

Bendix Environmental Research, Inc.
1390 Market Street, Suite 902
San Francisco, CA 94102

Principal-in-Charge: Selina Bendix, Ph.D.

Project Manager: T. Brett Roberts

Associate Project Manager: Robert Cowden

Contributors: Barbara D. Bessac
Lisa Bornstein
Mark D. Gould
Genevieve Hahn
Erica Kundidzora
B. Douglas Wilson

Sub-consultants

Noise:

Charles M. Salter Associates, Inc.
350 Pacific Avenue
San Francisco, CA 94111

Richard Illingworth, Engineer

Biotic Impacts:

Booker Holton and Associates
1824 Fourth Street
Berkeley, CA 94710

Booker Holton, Ph.D.

DKS Associates
1419 Broadway, Suite 700
Oakland, CA 94612

Rick Dowling, Senior Transportation Engineer

Project Sponsor

University of San Francisco
2130 Fulton Street
San Francisco, CA 94117

Project Counsel

Richard B. Spohn
Nossaman, Guthner, Knox and Elliott
Third Floor
100 The Embarcadero
San Francisco, CA 94105

Project Architect

Pflueger Architects
165 Tenth Street
San Francisco, CA 94103

John M. Pflueger, Architect
Richard Luckett, Project Manager

Cogeneration System Engineer

FMC Associates, Consulting Engineers
1068 Mission Street
San Francisco, CA 94101
Robert R. Fishman

Organizations and Persons Consulted

Bay Area Air Quality Management District
- Doug Wolf, Air Quality Engineer
- Sally Freidman, Planner

University of San Francisco
- Harold Hansen, Chief Engineer
- Kenneth A. Goss, former Director of Plant Services, now consultant to USF
- Robert Carpenter

St. Mary's Hospital and Medical Center
- Jaqueline Brooks, Administrator

Pacific Gas and Electric Company
- Sam Wells, Comercial Division
- Stuart Tartaglia, Marketing Division

San Francisco Fire Department
- Lt. Norman Silva

ROAN Corporation
- Patrick Hodges, President

Bay City Boiler and Engineering Company, Inc.
- John Greco

CHAPTER IX. DISTRIBUTION LIST

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State Clearinghouse
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Sacramento, CA 95814

Northwest Information Center
California Archaeological Inventory
Department of Anthropology
Sonoma State University
Rohnert Park, CA 94928
Attn: Christian Gerike

California Department of Transportation
Business and Transportation Agency
P.O. Box 7310
San Francisco, CA 94120
Attn: Darnall W. Reynolds
District CEQA Coordinator

REGIONAL AGENCIES

Association of Bay Area Governments
P.O. Box 2050
Oakland, CA 94609
Attn: Ann Berry

California Department of Transportation
Public Transportation Branch
P.O. Box 7310
San Francisco, CA 94120
Attn: David Tannehill

CITY AND COUNTY OF SAN FRANCISCO

Bureau of Building Inspection
450 McAllister Street
San Francisco, CA 94102
Attn: Robert Levy, Superintendent

City Attorney's Office
Room 206, City Hall
San Francisco, CA 94102
Attn: Paula Jesson, Deputy City Attorney

Landmarks Preservation Advisory Board
450 McAllister Street
San Francisco, CA 94102
Attn: Jonathan Malone

Mayor's Economic Development Council
480 McAllister Street
San Francisco, CA 94102
Attn: Mr. Bill Witte, Director

Public Utilities Commission
949 Presidio Avenue, Room 150
San Francisco, CA 94115
Attn: Tom Jordan, Dir. Bureau Services

Joseph Johnson, Director
Public Utilities Commission
Bureau of Energy Conservation
949 Presidio Avenue, Room 111
San Francisco, CA 94115

Recreation & Park Department
McLaren Lodge
Golden Gate Park
Fell and Stanyan Streets
San Francisco, CA 94102
Attn: Deborah Learner

San Francisco Bureau of Engineering
Streets and Highways
45 Hyde Street, Room 212
San Francisco, CA 94102

San Francisco City Planning Commission
450 McAllister Street
San Francisco, CA 94102
Attn: Lee Woods
Toby Rosenblatt, President
Susan Bierman
Roger Boas
Norman Karasick, Alt.
Jerome Klein
Yoshio Nakashima
C. Mackey Salazar
Douglas G. Wright, Alt.

San Francisco Department
of Public Works
Bureau of Engineering
Division of Streets and Highways
45 Hyde Street, Room 208
San Francisco, CA 94102
Attn: Tim A. Molinare

San Francisco Department
of Public Works
Traffic Engineering Division
460 McAllister Street
San Francisco, CA 94102
Attn: Scott Shoaf

San Francisco Fire Department
260 Golden Gate Avenue
San Francisco, CA 94102
Attn: Ed Phipps, Chief
Div. of Planning & Research

San Francisco Municipal Railway
MUNI Planning Division
949 Presidio Avenue, Room 204
San Francisco, CA 94115
Attn: Peter Straus

San Francisco Real Estate Dept.
450 McAllister Street, Room 600
San Francisco, CA 94102
Attn: Wallace Wortman

San Francisco Water Department
Distribution Division
425 Mason Street
San Francisco, CA 94102
Attn: George Nakagaki, Manager

San Francisco Department
of Public Works
Mechanical Engineering Section
45 Hyde Street, Room 222
San Francisco, CA 94102
Attn: Vivay K. Gupta

San Francisco Water Department
Distribution Division
425 Mason Street
San Francisco, CA 94102
Attn: Han Bruno, Assistant Manager

GROUPS AND INDIVIDUALS

AIA
San Francisco Chapter
790 Market Street
San Francisco, CA 94102

Steve Anderson
Charter Commercial Brokerage Co.
Market Research Department
Two Embarcadero, #1860
San Francisco, CA 94111

Alice Suet Lee Barkley
Bennet & Barkley
100 California Street, Suite 970
San Francisco, CA 94111

Bay Area Council
348 World Trade Center
San Francisco, CA 94111

Albert Beck
Geography Department
California State University, Chico
Chico, CA 95929

Fred Berthrong
TERA Advanced Services Corp.
2150 Shattuck Avenue
Berkeley, CA 94704

Tony Blaczek
Finance Department Coldwell Banker
1 Embarcadero Center, 23rd Floor
San Francisco, CA 94111
Berkeley, CA 94720

Georgia Brittan
870 Market Street, Room 1119
San Francisco, CA 94102

Michael Brown, Director
Office of Public Affairs
305 Loyola Hall
University of San Francisco
San Francisco, CA 94117

Brobeck, Phleger, Harrison
One Market Plaza
San Francisco, CA 94105
Attn: Susan R. Diamond

Michael Buck
1333 - 35th Avenue
San Francisco, CA 94122

Buena Vista Neighborhood
Association
783 Buena Vista Ave. West
San Francisco, CA 94117
Attn: Isabel Wade

Dale Carlson
369 Pine St. #800
San Francisco, CA 94104

Charter Commercial Brokerage Company
Market Research Department
Two Embarcadero, #1860
San Francisco, CA 94111

Chickering & Gregory
3 Embarcadero Center
23rd Floor
San Francisco, CA 94111
Attn: Kent Soule

Coalition for San Francisco
Neighborhoods
Mrs. Doris Murphy
175 Yukon Street
San Francisco, CA 94112

Cogswell College Library
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San Francisco, CA 94108

Joseph Cortiz
2853 22nd Street
San Francisco, CA 94110

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Cushman Wakefield
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Alex Diamondidis
58 Varnnes
San Francisco, CA 94133

James S. Dielschneider
258-B Red Rock Way
San Francisco, CA 94131

Rita Dorst
RB International Services
9 Boston Ship PLaza
San Francisco, CA 94111

Downtown Association
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San Francisco, CA 94104
Attn: Lloyd Pflueger

Michael Dyett
Blayney-Dyett
70 Zoe Street
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Ecumenical Ministry of the
Haight Ashbury
409 Clayton
San Francisco, CA 94102
Attn: Sharon Dunn

Environmental Impact Planning
319 Eleventh Street
San Francisco, CA 94103
Attn: Suzanne McAdams

Environmental Planning & Research, Inc.
649 Front Street
San Francisco, CA 94111
Attn: Leslie de Boer

Environmental Science Associates
Fox Plaza
1390 Market Street
San Francisco, CA 94102

Farella, Braun & Martel
235 Montgomery Street
San Francisco, CA 94102

The Foundation for San Francisco's
Architectural Heritage
2007 Franklin Street
San Francisco, CA 94109
Attn: H. Grant Dehart,
Executive Director

Friends of the Earth
1045 Sansome Street #404
San Francisco, CA 94111
Attn: Connie Parrish

Fuller Commercial Brokerage
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San Francisco, CA 94111
Attn: Kenneth T. Sproul

Gensler and Associates
550 Kearney Street
San Francisco, CA 94109
Attn: Jean Winslow

Charles T. Gill
The Aspen Group West, Inc.
505 Sansome Street
San Francisco, CA 94111

Goldfarb & Litman
491 Ninth Street
Oakland, CA 94607
Attn: Puala Crow

Kenneth A. Goss
P.O. Box 57158
Washington, D.C. 20037

Annette M. Granucci
Commercial News Publishing Co.
125 Twelfth Street
San Francisco, CA 94105

Gruen, Gruen & Associates
564 Howard Street
San Francisco, CA 94105

Haight Ashbury Neighborhood
Association
202 Grattan Street
San Francisco, CA 94117
Attn: Joel Ventresca

Mr. E.H. Hancock, Vice Pres.
of Business and Finance
University of San Francisco
2130 Fulton Street
San Francisco, CA 94105

Harold Hansen, Chief Engineer
Plant Services
University of San Francisco
San Francisco, CA 94117

Donald Head & Associates
109 Minna Street, #293
San Francisco, CA 94105

Valerie Hersey
Munsell Brown
950 Battery
San Francisco, CA 94111

Sue Hestor
4536 - 20th Street
San Francisco, CA 94114

Patrick Hodges, President
ROAN Corporation
177 Bovet Road, Suite 520
San Mateo, CA 94402

Jones Lang Wootton
710 One Embarcadero Center
San Francisco, CA 94104
Attn: Sheryl Bratton

Kaplan/McLaughlin/Diaz
222 Vallejo Street
San Francisco, CA 94111
Attn: Jan Vargo

Inner Sunset Action Committee
1344 5th Avenue
San Francisco, CA 94122
Attn: John Bardis

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Architecture & Planning, Inc.
580 Market Street, Suite 300
San Francisco, Ca 94104
Attn: Robert Fan, Jr.

Carole Lester
Lawyers Title Company of San Francisco
300 Montgomery Street, St. 1135
San Francisco, CA 94104

Martin L. MacIntyre
41 Temescal Terrace
San Francisco, CA 94118

Marathon U.S. Realties, Inc.
595 Market Street, Suite 1330
San Francisco, CA 94105
Attn: Rolf Wheeler

Bruce Marshall
San Francisco Muni Coalition
600 Montgomery Street, 13th Floor
San Francisco, CA 94111

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77 Beale Street, #2429
San Francisco, CA 94104

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364 Bush Street
San Francisco, CA 94104

Page, Anderson & Turnbulll
364 Bush Street
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San Francisco, CA 94120
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Planning Analysis & Development
530 Chestnut Street
San Francisco, CA 94133
Attn: Gloria Root

Mrs. G. Bland Platt
339 Walnut Street
San Francisco, CA 94104

Neville Price & Associates
25 Ecker Square, Suite 1050
San Francisco, CA 94105

Bruce Raful
Rothschild Cappiello
332 Pine Street, Suite 511
San Francisco, CA 94104

Research and Decisions Corporation
375 Sutter Street, Suite 300
San Francisco, CA 94108
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Law School,
Kendrick Hall
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San Francisco, CA 94118

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San Francisco, CA 94104
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400 Alabama Street, Room 100
San Francisco, CA 94110
Attn: Stanley Smith

San Francisco Chamber of Commerce
465 California Street
San Francisco, CA 94105
Attn: Richard Morten

San Francisco Christian School
699 Serramonte Blvd.
Daly City, CA 94015
Attn: Mr. John Innes

San Francisco Ecology Center
13 Columbus Avenue
San Francisco, CA 94111

San Francisco Labor Council
1855 Folsom Street
San Francisco, CA 94103
Attn: Bernard Speckman

San Francisco Planning & Urban
Research Association
312 Sutter Street
San Francisco, CA 94108

San Francisco Tomorrow
942 Market Street #505
San Francisco,CA 94102
Attn: Tony Kilroy

John Sanger, Pettit & Martin
101 California Street, 35th Floor
San Francisco, CA 94111

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Wayne E. Stiefvater, President
Appraisal Consultants
701 Sutter Street
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Temescal Terrace Association
Thor M. Firing, President
55 Temescal
San Francisco, CA 94118

Rod Teter
Cahill Construction Company
425 California St, Suite 2300
San Francisco, CA 94103

Jerry Tone, Loan Officer
Real Estate Industries Group
Wells Fargo Bank, N.A.
475 Sansome Street, 19th Floor
San Francisco, CA 94111

Kathy Van Velsor
19 Chula Lane
San Francisco, CA 94105

Stephen Weicker
899 Pine Street, #1610
San Francisco, CA 94108

Calvin Welch
Council of Community
Housing Organization
409 Clayton Street
San Francisco, CA 94117

Eunice Willette
1323 Gilman Avenue
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S.F. Clean Water Prog.
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San Francisco, CA 94101

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Mei Liu Chuang
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E.D. Conklin
65 San Rafael Way
San Francisco, CA 94118

John M. & Eleanor F. Coppola
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San Francisco, CA 94118

Eleanor D. Cook
233 Stanyan Street
San Francisco, CA 94118

Elaine Costello
132 Clayton St.
San Francisco, CA 94117

Florence Cutler
2942 Turk Street
San Francisco, CA 94118

Edouard & Vilma Daltavilla
2902 Turk Street
San Francisco, CA 94118

Frances Dealtry
59 Roselyn terrace
San /Francisco, CA 94118

Angela Delchiaro
2047 Fulton
San Francisco, CA 94118

Osso & Alma C. Dell
2065 Fulton Street
San Francisco, CA 94118

Louis & Eva Demartini
2536 McAllister Street
San Francisco, CA 94118

Marco & Marie Digrno
2576 McAllister Street
San Francisco, CA 94118

Mildred A. Dold
2128 Grove Street
San Francisco, CA 94117

Gerald K. & Sylvia Dowd
1871 Market Street
San Francisco, CA 94103

Estate of Hilda Ely
Jack Ely, Conservator
165 Alameda
Berkeley, CA 94704

Howard S. Erlanger
c/o State Property Management
1390 Noreiga Street
San Francisco, CA 94122

Kathleen R. Enzenbacher
28 Cole Street
San Francisco, CA 94117

Antonio & Carmelita Q. Fermin
2053 Fulton Street
San Francisco, CA 94118

Thomas & Cecilia Finney
2556 McAllister Street
San Francisco, CA 94118

Ruth Fireman
35 Kittredge Terrace
San Francisco, CA 94118

Martin & Collette Foley
2398 Golden Gate Avenue
San Francisco, CA 94118

Cathy Foote, Assoc. Dean
USF Law School
Kendrick Hall
Univ. of San Francisco
San Francisco, CA 94117

Frederick & Elsie Fung
225 Stanyan Street
San Francisco, CA 94118

Elmer J. Gaetjen
1583-35th Avenue
San Francisco, CA 94122

Alma Gaffney
2949 Turk Street
San Francisco, CA 94118

Maurice Gallagher
526 Parker Avenue
San Francisco, CA 94118

Margaret George
2282 Golden Gate Avenue
San Francisco, CA 94118

Ms. Eboni Gerard
2008A McAllister Street
San Francisco, CA 94118
Ronald & Pamela Grant
45 Cole Street
San Francisco, CA 94117

Clarence L. & Jutta Grider
46 Loyola Terrace
San Francisco, CA 94118

John A Grennan Co.
c/o Hibernia Bank
P.O. Box 3808 Rincon Annex
San Francisco, 94119

Mose B. & Edna M. Herron
34 Cole Street
San Francisco, CA 94117

Jack Hirose
532 Parker Avenue
San Francisco, CA 94118

Kevin S. & Karen J. Hom
27 Paramount Terrace
San Francisco, CA 94118

John L. House, Sr.
2195 Golden Gate Avenue
San Francisco, CA 94118

Morris Howard
43 Cole Street
San Francisco, CA 94118

Boris & Galina Hrapoff
275 Stanyan Street
San Francisco, 94118

Jessen & Tsaisia Hwang
891-28th Avenue
San Francisco, CA 94121

Ignatian Corporation
2001 37th Avenue
San Francisco, CA 94116

Pauline Isaacs
219 Stanyan Street
San Fancisco, CA 94118

Carl M. & Takayo G. Iwatsubo
31 Loyola Terrace
San Francisco, CA 94118

Alexander P. & Tamara Izotoff
51 Paramount Terrace
San Francisco, CA 94118

Richard S. Johns
53 Cole Street
San Francisco, CA 94117

William Johns
24 West Park Drive
Daly City, CA 94015

Casereo & Maria Juanarena
211 Stanyan Street
San Francisco, CA 94118

Howard Junker
37 Loyola Terrace
San Francisco, CA 94118

John & Barbara Kiley
23 Anapolis Terrace
San Francisco, CA 94118

Rose Koch
c/o Alvina Bailey
1209 6th Avenue N
Great Falls, MT 59401

Bertrand & Estelle Kragen
237 Stanyan Street
San Francisco, CA 94118

Hung Shoon Lee
784 Stanyan Street
San Francisco, CA 94118

William C. & Ann S. Lee
501 Masonic Avenue
San Francisco, CA 94118

Harold Leeds, Trustee
84 Camoustie Drive
San Francisco, CA 94118

Erasmo & Mireya Leiva
216 Clayton Street
San Francisco, CA 94117

Margaret A. Lippert
c/o Florence Foley
2920 Turk Street
San Francisco, CA 94118

Peter B. Lit
1033 Greenwood Road
Elk, CA 95432

Chuang M. Liu
229 Stanyan Street
San Francisco, CA 94118

Peter & Patty Loo
19 Loyola Terrace
San Francisco, CA 94118

Theodore & Devi Mackay
61 Cole Street
San Francisco, CA 94117

James & Mimi Mancini
2554 McAllister Street
San Francisco, CA 94118

I.J. & Victoria Martinez
P. O. Box 155
Kings Beach, CA 95719

Michael & Margaret McEvoy
50 Lomita Avenue
San Francisco, CA 94122

David McElhatton
2441 Carlmont Drive
Belmont, CA 94002

Howard Morris
1256 Masonic Avenue
San Francisco, CA 94117

Michael & Mary Mullin
2095 Fulton Street
San Francisco, CA 94117

Bernhard & Helen Munter
3010 Turk Street
San Francisco, CA 94118

Clara Murphy
1985 Fulton Street
San Francisco, CA 94118

Mary K. Murphy
61 Annapolis Terrace
San Francisco, CA 94118

Philip B. & Gayle R. Nelson
57 Paramount Terrace
San Francisco, CA 94118

Conrado P. O'Compo
1982 Fulton Street
San Francisco, CA 94118

Andrew G. & Patsy Olivier
430 Masonic Avenue
San Francisco, CA 94118

Gracela S. Oppici
2150 Grove Street
San Francisco, CA 94117

Aileen O'Reilly
2071 Fulton Street
San Francisco, CA 94118

Timoteo & Nieves Pascual
40 Shrader Street #301
San Francisco, CA 94117

Claude D. Perasso
3055-26th Avenue
San Francisco, CA 94132

Margaret Petrocchi
33 Paramount Terrace
San Francisco, CA 94118

Helen Pil, Trustee
c/o John Dito & Son
596 Pacific Avenue
San Francisco, CA 94133

Andrew & Nancy Quock
195 Beaumont Place
San Francisco, CA 9418

Winchell & Jeanne Quock
59 Temescal Terrace
San Francisco, CA 94118

Elizabeth Richberger
536 Parker Avenue
San Francisco, CA 94118

Juan & Margarita Rodezno
2566 McAllister Street
San Francisco, CA 94118

St. Mary's Hospital and
Medical Center
2200 Hayes Street
San Francisco, CA 94117

Robert F. Sale
540 Parker Avenue
San Francisco, CA 94118

Ida Scettrini
1207 Marshall Street
Turlock CA, 95380

Steven P. Shon
39 Paramount Terrace
San Francisco, CA 94118

John & Beatrice Smalley
60 Temescal Terrace
San Francisco, CA 94118

Mato Sriensich
2601 McAllister Street
San Francisco, CA 94118

Helen Stathis
485 Parker Avenue
San Francisco, CA 94118

Lorraine E. Streltzoff
2132 Grove Street
San Francisco, CA 94117

David & Frances Strykowski
242 Orchard Road
Orinda, CA 94563

Calvin K. & Erlynn Sung
500 Masonic Avenue
San Francisco, CA 94118

Leon Svirsky
2003 Fulton
San Francisco, CA 94118

Mark Terjesen
2514 McAllister Street
San Francisco, CA 94118

George & Mary Thompson
2510 McAllister Street
San Francisco, CA 94118

Transwestern Title Co.
2029 Fulton Street
San Francisco, CA 94118

Raymond S. Totah
615 Schwerin Street
Daly City, CA 94014

Karl F. & Lilly M. Urbach
2 Atalaya Terrace
San Francisco, CA 94118

Larry Vierra
1 Market Plaza, Suite 3001
San Francisco, CA 94106

John E. Wai
645 Stockton Street #707
San Francisco, CA 94117

Yui Sing & Yuk Ngan Wai
2140 Grove Street
San Francisco, CA 94117

W. Urie & Krista Walsh
51 Cole Street
San Francisco, CA 94118

Western Title Insurance Co.
701 Parker Avenue
San Francisco, CA 94118

Randall & Carolyn Wong
122 Reed Blvd.
Mill Valley, CA 94941

Dick & May Young
c/o D. Wong United Fire
& Casualty
1151 Hyde Street
San Francisco, CA 94109

Gin Yiu & Miu Wong Young
21 Paramount Terrace
San Francisco, CA 94118

Lena Zambonin
45 Paramount Terrace
San Francisco, CA 94118

Sadie Zemel
3006 Turk Street
San Francisco, CA 94118

MEDIA

San Francisco Bay Guardian
2700 - 19th Street
San Francisco, CA 94110
Attn: Patrick Douglas, City Editor

San Francisco Business Journal
635 Sacramento Street, Suite 310
San Francisco, CA 94111

San Francisco Chronicle
925 Mission Street
San Francisco, CA 94103
Attn: Evelyn Hsu

San Francisco Examiner
110 - 5th Street
San Francisco, CA 94103
Attn: Gerald Adams

San Francisco Progress
851 Howard Street
San Francisco, CA
Attn: E. Cahill Maloney

The Sun Reporter
1366 Turk Street
San Francisco, CA 94115

Tenderloin Times
146 Leavenworth Street
San Francisco, CA 94102
Attn: Rob Waters

LIBRARIES

Cogswell College Library
600 Stockton Street
San Francisco, CA 94108

Documents Library
City Library - Civic Center
San Francisco, CA 94102
Attn: Faith Van Liere

Environmental Protection Agency Library
215 Fremont Street
San Francisco, CA 94105
Attn: Jean Circiello

Stanford University Libraries
Jonson Library of Government Documents
State and Local Documents Division
Stanford, CA 94305

Government Publications Department
San Francisco State University
1630 Holloway Avenue
San Francisco, CA 94132

Hastings College of the Law - Library
200 McAllister Street
San Francisco, CA 94102

Institute of Governmental Studies
1209 Moses Hall
University of California
Berkeley, CA 94820

APPENDICES

DEPARTMENT OF CITY PLANNING 450 McAllister St. - 5th Floor
(415)558-5260

NOTICE THAT AN
ENVIRONMENTAL IMPACT REPORT
IS DETERMINED TO BE REQUIRED

Date of this Notice: December 2, 1983

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister St. - 5th Floor, San Francisco CA 94102

Agency Contact Person: Ginny Puddefoot Tel: (415) 558-5260

Project Title: 83.469E:
USF Cogeneration Facility

Project Sponsor: University of San Francisco

Project Contact Person: Ken Goss

Project Address: Southside of Fulton Street between Shrader and Cole Streets

Assessor's Block(s) and Lot(s): 1190/1

City and County: San Francisco

Project Description: Construction on USF main campus of 17,400 square foot, 26 foot high cogeneration facility producing steam and electricity; requiring conditional use authorization.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15081 (Determining Significant Effect), 15082 (Mandatory Findings of Significance) and 15084 (Decision to Prepare an EIR), and the following reasons, as documented in the Initial Evaluation (initial study) for the project, which is on file at the Department of City Planning:

See attached.

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: December 12, 1983.

An appeal requires 1) a letter specifying the grounds for the appeal, and 2) a $35.00 filing fee.

Alec S. Bash, Environmental Review Officer

University of San Francisco
Cogeneration Facility
Initial Study
83.469E

I. PROJECT DESCRIPTION

The University of San Francisco (USF), the project sponsor, proposes to construct a Cogeneration Facility producing steam and electricity. The proposed site is on the USF main campus, on the south side of the 2100 block of Fulton St., bordered to the west by Shrader St. and to the east by Cole St. (see Figure 1, p. 2). The project would cover about 17,400 sq. ft. of Lot 1, Assessor's Block 1190. This site is in an RH-3 (House, Three Family) zoning district and an 80-D Height and Bulk District. Undeveloped except for a 900 sq. ft. patio on the northwest corner, the site is on a slope east of Kendrick Hall Law School. The remainder of the project block is occupied by residences.

The proposed Cogeneration Facility would use natural gas fuel to cogenerate steam and electricity. This cogeneration system would replace the steam plant currently in use at USF. The steam produced (approximate capacity of 17,000 lb/hr, 125 psi steam and 14,000 lb/hr, 15 psi steam)[1] would be used for heating both in USF campus buildings and at St. Mary's Hospital and Medical Center. The electricity generated (9,500 kW maximum capacity) would be sold to PGandE; in return, USF would pay a more favorable rate for University electrical needs. The equipment, including turbine generators, boilers, and steam pumps, would be housed in a 60-foot wide, 120-foot long and 26-foot high, acoustically treated, concrete building, which would be set into the slope east of USF's Kendrick Hall (see Figures 2 and 3, pp. 3 and 4). The structure would be landscaped, including a number of new trees (see Figures 3 and 4, pp. 4 and 5). A pedestrian plaza would

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(text continues on page 6)

1. psi = Pounds per square inch.

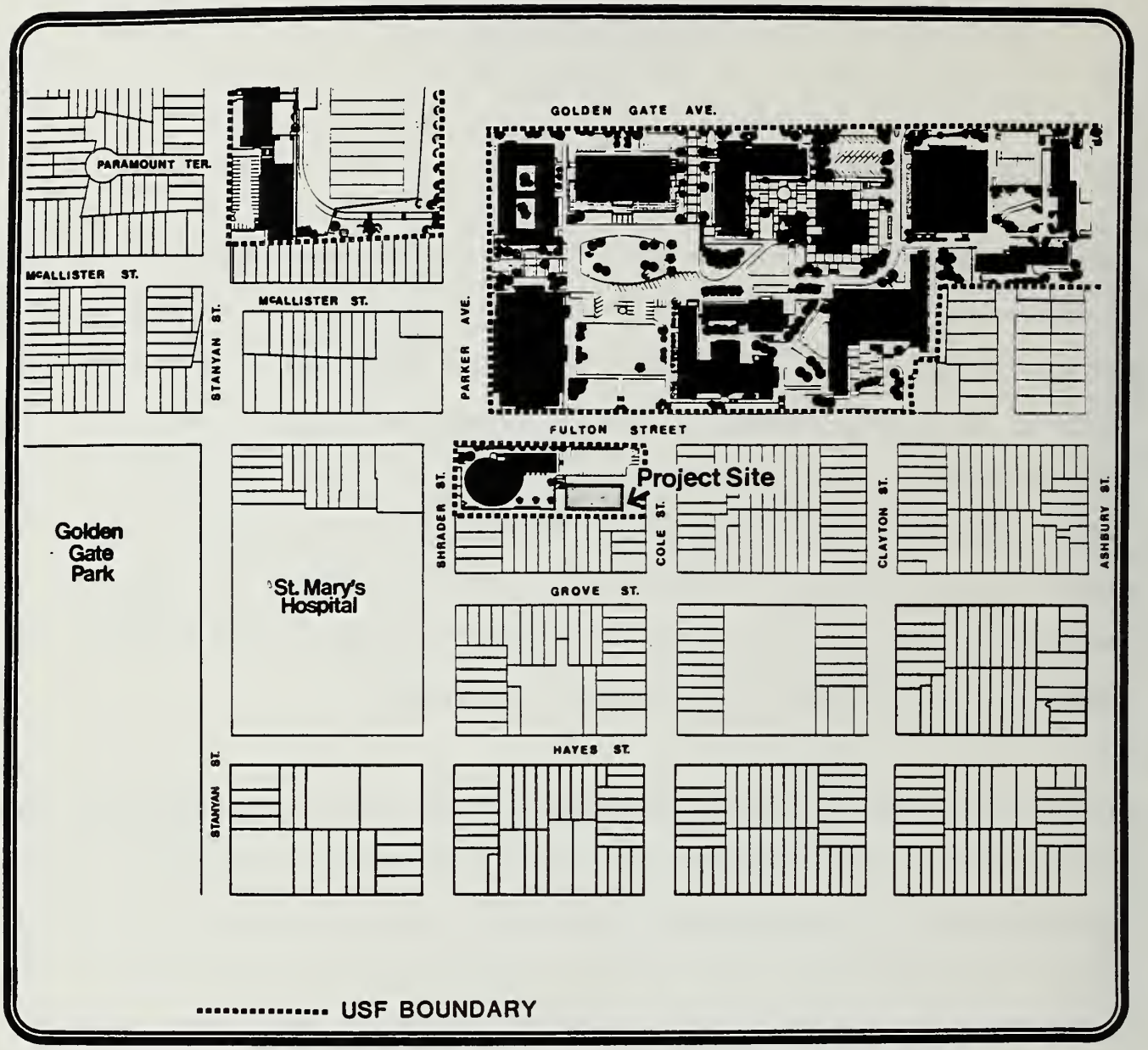

FIGURE 1

SCALE: 1" = 300'

PROJECT SITE

SITE LOCATION

USF COGENERATION FACILITY

N

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

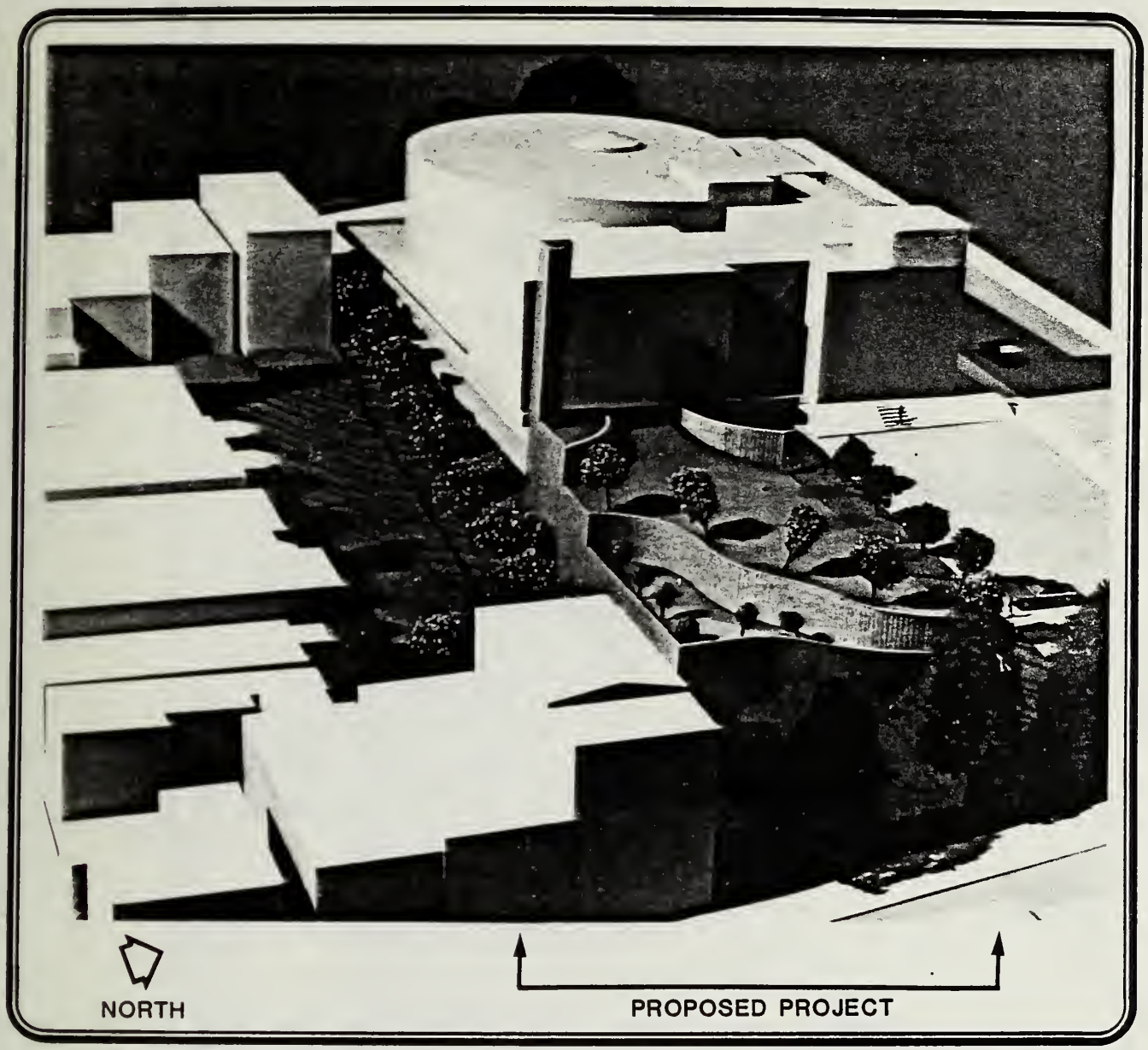

FIGURE 2

MODEL PHOTO

USF COGENERATION FACILITY

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

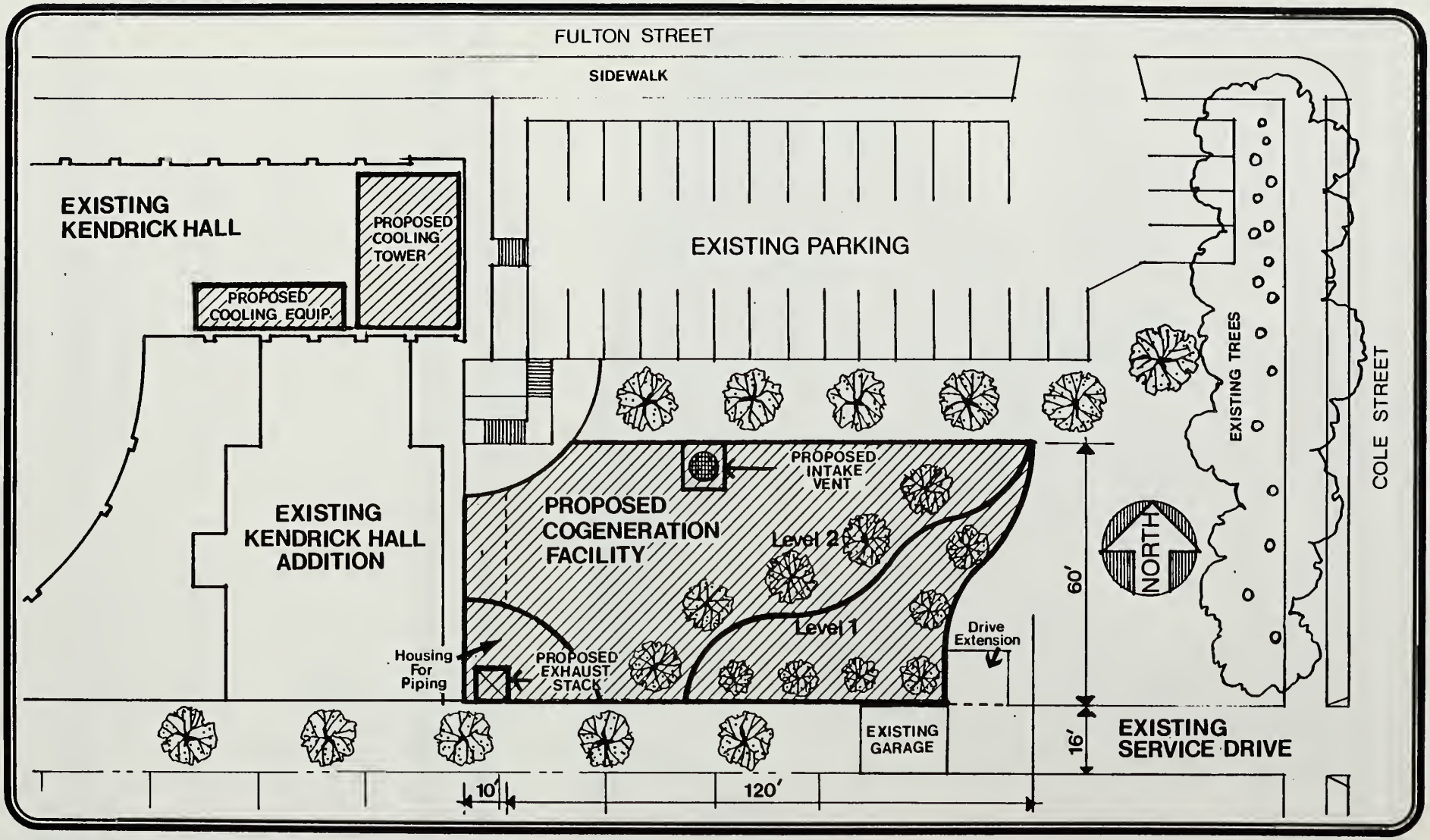

FIGURE 3

SITE PLAN

USF COGENERATION FACILITY

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

SCALE: 1/32 in. to 1 ft.

PROPOSED TREES

PROPOSED PROJECT

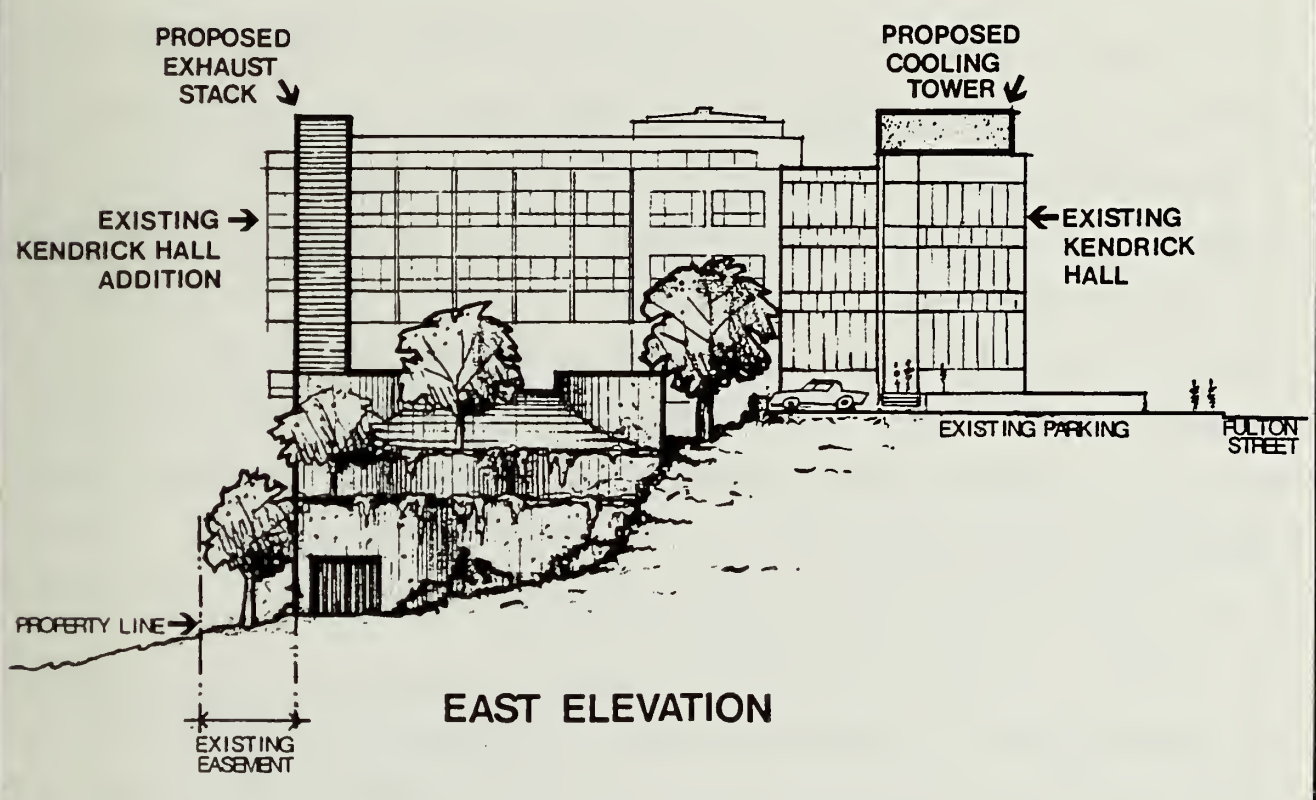

FIGURE 4

SCALE: 1/48" = 1'0"

EAST ELEVATION

— PROPOSED PROJECT OUTLINE

USF COGENERATION FACILITY

SOURCE: Bendix Environmental Research, Inc., and Pflueger Architects

be created on top of the upper level of the facility, which would be level with Fulton St. The cooling tower required by the facility would be located on top of the north end of Kendrick Hall. An existing service drive would be extended to connect the Cogeneration Facility to Cole Street.

At the time the University of San Francisco submitted its 1983 revised campus master plan to the San Francisco Planning Commission, both a windmill project and a cogeneration project were included in USF's energy management program. The windmill project has been deleted because preliminary environmental investigation has revealed that windmill construction at the proposed site is not feasible. Because of on-going interest in alternate energy sources, USF may decide to investigate the feasibility of other possible windmill sites in the future. Any new windmill project resulting from such investigation would be subject to independent environmental evaluation.

II. SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

The proposed project is examined in this Initial Study in order to determine potential effects on the environment. The following potential impacts have been identified and will be addressed in an Environmental Impact Report (EIR) to be prepared on the project.

- Relationship of the project to energy consumption and production on-site, and to regional power demands;
- Stack emissions generated by the project and their effects on sensitive receptors;
- Noise and vibration impacts during project construction and operation;
- Relationship of the project to, and effects on, land uses in the project vicinity;

- Views of the project;
- Fire hazards and other safety risks as a result of the project;
- Relationship of the proposed facility to the City Planning Code and Master Plan; and
- Impacts of project financing on USF.

The following potential environmental impacts were determined either to be insignificant or to have been mitigated through measures included in the project. These items require no further environmental analysis and will not be addressed in the EIR:

Population: The project would provide four full-time jobs and an unknown number of jobs during the approximately nine-month construction period. The project would not induce substantial growth or concentration of population, displace a large number of people, or create a substantial demand for additional housing.

Transportation: There would be temporary transportation impacts associated with the construction of the project. Transportation impacts of project operation would include employee trips and occasional service deliveries. These impacts would not change present circulation patterns, require expansion of streets or parking facilities in the project vicinity, or produce noticeable changes in traffic levels.

Utilities/public services: The project would increase demand for utilities and public services but would not require additional service facilities.

Biology: Biotic impacts associated with the removal of trees prior to project construction would be reduced by the inclusion of a greater number of trees in the project landscaping. No other biotic impacts resulting from the project are expected.

Geology: The project would not expose people or structures to geologic hazards other than those typical of any San Francisco site due to proximity of the San Andreas Fault. The project sponsor would follow the recommendations of a site-specific soil investigation by a California licensed engineer during construction to minimize possible excavation, construction and earthquake hazards.

Water quality: The project would use water for steam condensation and boiler feedwater from the City water supply. Project water discharge would be fed directly into the sewers. Project water use would not contaminate public water or groundwater supplies or consume a quantity of water affecting San Francisco water supply or management plans. Changes in water runoff from the site would not result in flooding or erosion problems.

Cultural factors: An existing patio would be replaced with a larger public plaza on the roof of a new building. The project is not expected to affect archeological or paleontological sites because of previous excavation of much of the site. A mitigation measure has been included in the event that archeological resources are encountered.

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS.

Could the project:	YES	NO	DISCUSSED
1. Require a variance, special authorization, or change to the City Planning Code or Zoning Map?	X		X
*2. Conflict with the Comprehensive Plan of the City and County of San Francisco?		X	
*3. Conflict with any other adopted environmental plans and goals of the City or Region?		X	

The proposed project would require Conditional Use authorization from the City Planning Commission because the project site is in a Residential District.

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* Derived from State EIR Guidelines, Appendix G, normally significant effect.

Zoning and the relationship of the project to policies of the City's Comprehensive Plan will be discussed in the EIR.

B. ENVIRONMENTAL EFFECTS. Could the project:

	YES	NO	DISCUSSED
1. Land Use			
*a. Disrupt or divide the physical arrangement of an established community?		X	
b. Have any substantial impact upon the existing character of the vicinity?	X		X

Surrounding land uses generally consist of two- and three-family residences and the USF campus. The site is two blocks east of Golden Gate Park and one block east of St. Mary's Hospital and Medical Center (see Figure 1, p. 2). The relationship of the proposed project, an energy-producing plant, to surrounding land uses will be discussed in the EIR.

2. Visual Quality			
*a. Have a substantial, demonstrable negative aesthetic effect?	X		X
b. Substantially degrade or obstruct any scenic view or vista now observed from public areas?		X	
c. Generate obtrusive light or glare substantially impacting other properties?		X	X

The project involves the construction of a building on a currently vacant lot. Visual impacts of the proposed structure will be discussed in the EIR.

As the building would be windowless and set into a slope, no light from within the facility would be expected to result in visible light off-site. A safety light, which would be shielded to minimize visual impact, would be installed outside of the door on the east side of the building. There is currently one

streetlight on Cole St. within 90 ft. of this door; visual impacts of the safety light would not be expected to be obtrusive off-site. To eliminate potential glare from the proposed facility, the structure would be constructed of textured concrete, would be painted a neutral color, and would not have windows. This topic requires no further analysis and will not be discussed in the EIR.

	YES	NO	DISCUSSED
3. Population			
*a. Induce substantial growth or concentration of population?	___	X	X
*b. Displace a large number of people (involving either housing or employment)?	___	X	X
c. Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	___	X	X

Four new employees would be required for maintenance and operation of the project. No housing or job displacement would occur. The project would not be expected to attract additional residents or students to USF or the campus environs since the project would not create housing or jobs; energy supply is not currently a factor in San Francisco's population size. The project thus would not create demand for additional housing in San Francisco or result in measurable effects on the housing supply. This topic requires no further analysis and will not be discussed in the EIR.

4. Transportation/Circulation			
*a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	___	X	X
b. Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?	___	X	X

	YES	NO	DISCUSSED
c. Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	___	X	___
d. Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	___	X	___

During construction, trucks would make deliveries to the project and construction workers would travel to and from the site. This could temporarily result in an increase in surface use of streets in the project vicinity. Construction would not be expected to result in a substantial change in traffic patterns or create new demands for parking or streets. No disruption of traffic flow due to construction vehicles would be expected.

After completion of the project, four new employees would be hired by USF to operate and maintain the new facilities. These workers would generate a maximum of 20 new person trip-ends per day, of which 8 would be external to the campus. Occasional service deliveries would be made via the service drive. These trips would not be expected to be noticeable. No further discussion of these items is necessary and they will not be addressed in the EIR.

5. Noise

*a. Increase substantially the ambient noise levels for adjoining areas?	X	___	X
b. Violate Title 25 Noise Insulation Standards, if applicable?	___	X	___
c. Be substantially impacted by existing noise levels?	___	X	___

During construction of the project, noise levels would be temporarily elevated in the vicinity. In operation, the Cogeneration Facility could raise noise levels

in the project vicinity. Noise and vibration impacts of the project during construction and operation will be discussed in the EIR.

6. Air Quality/Climate	YES	NO	DISCUSSED
*a. Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	X		
*b. Expose sensitive receptors to substantial pollutant concentrations?	X		
c. Permeate its vicinity with objectionable odors?		X	X
d. Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region?		X	X

The Cogeneration Facility would burn natural gas, resulting in emissions of nitrogen oxides (NO_x), carbon monoxide (CO) and lesser amounts of other air pollutants. The relationship of the project to air quality standards, and projected emission levels and their effects on sensitive receptors will be discussed in the EIR.

Natural gas fuel would be supplied by underground pipes and standby liquid fuel would be stored underground with no accompanying odors. Exhaust from the proposed facility, like the exhaust from the current boiler, would not have a noticeable odor. This item requires no further analysis and will not be discussed in the EIR.

As the proposed facility would be set into an existing hillside, the structure would not alter wind, moisture or temperature conditions in the project vicinity. This topic requires no further analysis and will not be addressed in the EIR.

	YES	NO	DISCUSSED
7. Utilities/Public Services			
*a. Breach published national, state or local standards relating to solid waste or litter control?	___	X	___
*b. Extend a sewer trunk line with capacity to serve new development?	___	X	___
c. Substantially increase demand for schools, recreation or other public facilities?	___	X	___
d. Require major expansion of power, water, or communications facilities?	___	X	X

The Cogeneration Facility would increase demand for City services (water and sewage treatment). Water consumption would be about 70 gallons per minute (gpm), which the Water Department can furnish (see letter of 16 September 1982 on file and available for public review at the Office of Environmental Review, Department of City Planning, 450 McAllister St., San Francisco); this water would supplement recycled water use in project boilers and the cooling tower. An increase of approximately 8 gpm flow to sewers from cooling tower blowdown[1] water would occur. The Department of Public Works has confirmed (see letter of 3 August 1983 on file and available for public review at the Office of Environmental Review, Department of City Planning) that no expansion of facilities would be necessary, that the existing sewer main could accept this waste stream and that the sewage treatment could process this flow. This item requires no further discussion and will not be adressed in the EIR.

8. Biology			
*a. Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	___	X	___

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1. blowdown = relatively small amounts of water, containing accumulated suspended and dissolved solids, removed from a cooling tower.

	YES	NO	DISCUSSED
*b. Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migratory fish or wildlife species?	___	X	X
c. Require removal of substantial numbers of mature, scenic trees?	___	X	X

The surface of the project site consists of earth excavated from the construction of the Kendrick Hall Addition. Vegetation is typical of vacant lots in the San Francisco area and consists primarily of grasses and other volunteer[1] herbaceous plants. Trees on the site which would be removed for project construction include: four volunteer cypress over four inches in trunk diameter and between 20 and 25 feet tall; two smaller volunteer cypress; several volunteer juniper and broom trees, and one silktassel tree, all less than four inches in trunk diameter and under six feet tall.[2] A row of 70 to 75 ft. tall cypress on the eastern edge of the site along Cole Street would remain standing. A number of trees, 20-30 ft. in height, would be planted along the south face of the Cogeneration Facility and Kendrick Hall Addition and on the north side of the Facility. Several trees between 8 and 15 ft. tall would be planted on the roof of the Facility as part of the plaza landscaping. This would reduce the impact of cutting trees presently on the site. No further analysis of this item is necessary and it will not be discussed in the EIR.

The animals presently living on the project site are those typical of urban vacant lots. Mammals may include various rodents such as field mice, gophers, wood rats and squirrels. Due to the proximity of Golden Gate Park, any animals

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1. volunteer = not deliberately planted.
2. All information on flora and fauna taken from Booker Holton, Biologist's Report on USF Project Sites, Booker Holton & Associates, August 1983, available for public review at the Office of Environmental Review, Department of City Planning, 450 McAllister St., San Francisco.

found in the park may occur at the site occasionally. These animals may include skunk, raccoon, feral cat and dog. The construction of the Cogeneration Facility would eliminate most of the habitat for the mammals mentioned above. The Facility would not be expected to impact bird populations because the planting of trees proposed for the site would provide habitat for birds in the area; temporary impacts on bird habitat would occur during construction. As disturbed animals could move to other portions of the USF campus or to nearby residential yards during construction, the impact on animals would not be significant. This item requires no further analysis and will not be addressed in the EIR.

	YES	NO	DISCUSSED
9. Geology			
*a. Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction)?	___	X	X
*b. Change substantially the topography or any unique geologic or physical features of the site?	___	X	___

Geologic evaluation of the project area indicates that movement on the San Andreas Fault of the magnitude of the 1906 earthquake (8.3 on the Richter scale) would probably result in strong motion at the Cogeneration Facility site and slight damage to USF campus buildings.[1] Approximately 100,000 cu. ft. of material would have to be excavated for construction of the project. In accordance with Bureau of Building Inspection requirements, the project sponsor would obtain a site-specific soils report from a California licensed soils engineer and has agreed to construct the project in accordance with the recommendations of this report with regard to foundation and structure. This topic requires no further analysis and will not be addressed in the EIR.

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1. URS/John A. Blume & Associates, San Francisco Seismic Safety Investigation, June, 1974.
   Slight damage = some cracked and damaged walls, partitions, and stairways; broken chimneys; structural damage generally minor, if any.

	YES	NO	DISCUSSED
10. Water			
*a. Substantially degrade water quality, or contaminate a public water supply?	___	X	X
*b. Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge?	___	X	___
*c. Cause substantial flooding, erosion or siltation?	___	X	X

The project would use water for steam condensation and to feed boilers. All discharge of water from the project cooling tower would be fed directly into the sewer (see Utilities/Public Services, p. 13). This use and disposal of water would not contaminate or degrade public water or groundwater supplies. The project would not substantially affect water runoff to cause flooding or erosion problems. This item requires no additional analysis and will not be addressed in the EIR.

	YES	NO	DISCUSSED
11. Energy/Natural Resources			
*a. Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	X	___	X
b. Have a substantial effect on the potential use, extraction, or depletion of a natural resource?	X	___	X

The net increase in natural gas fuel use at the Cogeneration Facility would average about 630 therms/hr, with total natural gas requirements of approximately 21,000 therms/day or 7,600,000 therms/yr.[1] Electricity requirements for project operation would total about 2,100,000 kWh annually;[2] the project would produce

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1. therm = 100,000 Btu; Btu (British Thermal Unit) = a standard for measuring heat, about equal to that from burning one standard kitchen match. Technically, it is the quantity of heat required to raise the temperature of one pound of water 1° Fahrenheit (251.98 calories) at Sea Level.
2. kilowatthour (kWh) = the most common unit for measuring electric energy, the kWh is the quantity of electricity delivered in one hour at the rate of one kilowatt (1,000 watts). Ten 100-watt light bulbs burning one hour use one kilowatthour.

approximately 75,000,000 kWh of electricity annually. The relationship of the project to energy consumption and production on-site will be discussed in the EIR. The Cogeneration Facility could have a substantial effect on the potential extraction and depletion of fossil fuels in that the project would conserve energy by using fossil fuel (natural gas) more efficiently than usual heating and power generation methods, reducing regional demand for fossil fuels. The relationship of the project to regional energy demands will be discussed in the EIR.

	YES	NO	DISCUSSED
12. Hazards			
*a. Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?	X		X
*b. Interfere with emergency response plans or emergency evacuation plans?		X	
c. Create a potentially substantial fire hazard?	X		X

Natural gas fuel, which is a fire hazard and explosive, would be used at the proposed facility. Standby diesel fuel (also a fire hazard and explosive) would be stored, as it is at the existing boiler plant. Water treatment chemicals, including sulfuric acid and sodium hydroxide, would be used. Standard safety devices and safe handling methods would be in effect which would meet applicable safety regulations and minimize danger of fire or hazard to people. Fire hazards and other health and safety issues will be discussed in the EIR.

13. Cultural			
*a. Disrupt or adversely affect a prehistoric or historic archeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study?		X	X

	YES	NO	DISCUSSED
*b. Conflict with established recreational, educational, religious or scientific uses of the area?	___	X	X
c. Conflict with preservation of any buildings of City landmark quality?	___	X	___

An existing patio at the Cogeneration Facility site is used for student recreation. This area would be temporarily unavailable during construction. Upon completion of the facility, a new plaza (larger than the existing patio) on top of the facility would be available for recreational use. As the surface of the site is composed of earth excavated during the construction of Kendrick Hall Addition, it is unlikely that archeological resources are present on the site. However, if any archeological resources are found on the site during construction, the project sponsor has agreed to the mitigation measure below. No further discussion of this topic is required and it will not be addressed in the EIR..

C. OTHER

Require approval of permits from City Departments other than DCP or BBI; or from Regional, State or Federal Agencies?	X	___	X

Permits would be required from the Federal Energy Regulatory Commission (FERC) (received 22 June 1983), California Public Utilities Commission (PUC), and Bay Area Air Quality Management District (BAAQMD). Requirements and scope of permits will be discussed in the EIR.

D. MITIGATION MEASURES

	YES	NO	N/A	DISCUSSED
1. If any significant effects have been identified, are there ways to mitigate them?	X	___	___	X
2. Are all mitigation measures identified above included in the project?	X	___	___	X

Mitigation measures currently proposed as part of the project are listed below. Other mitigation measures may be identified during subsequent environmental review and will be included in the EIR.

Should evidence of historic or prehistoric artifacts be uncovered at the site during construction, the project sponsor would agree to: (1) require the project contractor to notify the Environmental Review Officer and the President of the Landmarks Preservation Advisory Board; (2) require that the contractor suspend construction in the area of the discovery for a maximum of four weeks to permit review of the find and, if appropriate, retrieval of artifacts; (3) employ an archeologist or other expert acceptable to the Environmental Review Officer to help the Office of Environmental Review determine the significance of the find and identify feasible measures, if any, to preserve or recover artifacts; and (4) implement any feasible mitigation measures identified by the archeologic consultant.

E. MANDATORY FINDINGS OF SIGNIFICANCE	YES	NO	DISCUSSED
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major period of California history or prehistory?		X	
*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?		X	
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.)		X	

	YES	NO	DISCUSSED
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?	___	X	___
*5. Is there a serious public controversy concerning the possible environmental effect of the project?	X	___	X

Many people have expressed their concerns about the potential impacts of this project at community meetings held by USF and at the Institutional Master Plan hearing before the Planning Commission. Planning Commissioners expressed concern at this hearing regarding the potential impacts of the proposed project. There are community concerns that: 1) cumulative project impacts would disrupt the quality of the residential neighborhood; 2) air pollution and safety impacts would adversely affect human health; 3) the project may conserve energy at the expense of unacceptable land use impacts due to an industrial use in a residential area; and 4) significant noise impacts may result from project implementation. These topics will be addressed in the EIR.

F. FINDINGS ON THE BASIS OF THIS INITIAL STUDY:

_____ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

_____ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers _____, in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

__X__ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Alec S. Bash
Environmental Review Officer

for

Dean L. Macris
Director of Planning

DATE: December 2, 1983

San Francisco Air Pollutant Summary

Pollutant	Standard	1980	1981	1982
OZONE (O_3)				
Maximum (1-hr. avg. ppm[1])	0.12[2]	0.09	0.07	0.08
Days standard exceeded		0	0	0
CARBON MONOXIDE (CO)				
Maximum (1-hr. avg. ppm)	35[2], 20[3]	10.0	8.0	12.0
Maximum (8-hr. avg. ppm)	9[2]	7.5	11.2[4]	9.1/14.5[4]
Days 8-hr. standard exceeded		0	1	1
NITROGEN DIOXIDE (NO_2)				
Maximum (annual mean ppm)	0.05[2]	0.029	0.027	0.027
Maximum (1-hr. avg. ppm)	0.25[3]	0.17	0.11	0.13
Days 1-hr. standard exceeded		0	0	0
SULFUR DIOXIDE (SO_2)				
Maximum (24-hr. avg. ppm) (with concurrent TSP or ozone exceedance)	0.05[3]	0.018	0.016	0.012
Days standard exceeded		0	0	0
TOTAL SUSPENDED PARTICULATES (TSP)				
Mean[5]	60[2], 30[3]	52	56	57
Maximum (24-hr. avg)[6]	150[2], 100[3]	173	103	126
Days Federal 24-hr. Standard exceeded		1	0	0
Days State 24-hr. Standard exceeded		6	1	3

1. ppm = parts per million
2. Federal Standard (for pollutants with a primary and secondary standard, only the secondary standard).
3. California State Standard (State Standard for TSP is 50 micrograms per cubic meter as of 1983).
4. At street level
5. Annual geometric mean in micrograms per cubic meter
6. In micrograms per cubic meter.

SOURCE: BAAQMD, Air Pollution by Station and Contaminant: 1980, 1981, 1982; Sally Friedman, BAAQMD Planner, 23 September 1983 telephone conversation; California Air Quality Data: Summary of Air Quality: Gaseous and Particulate Pollutants: 1980, 1981, 1982; and Bendix Environmental Research, Inc.

APPENDIX C

Fundamental Concepts of Environmental Noise

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

a. the intensity or level of the sound;
b. the frequency spectrum of the sound;
c. the time-varying character of the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve described above is called "A" weighting, and the level so measured is called the "A-weighted sound level", or simply "A-level".

The A-level in decibels is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure A-1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise sources which creates a relatively steady background noise in which no particular source is identifiable. These distant sources may include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows

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its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. The L10 is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the "average peak" noise. The L50 is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L50 represents the median sound level. The L90 is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L90 is used to describe the background noise.

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the Leq is also widely used. The Leq is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The Leq is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises.

During the nighttime, exterior background noises are generally lower than the daytime levels. However most household noise also decreases at night and exterior noises become very noticeable. Further most people are sleeping at night and are very sensitive to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor, Ldn, (day-night equivalent sound level) was developed. The Ldn divides the 24-hour day into the daytime of 7 am to 10 pm and the nighttime of 10 pm to 7 am. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Ldn, then, is the A-weighted average sound level in decibels during a 24-hour period with 10 dBA added to the hourly Leqs during the nighttime. For highway noise environments the Leq during the peak traffic hour is approximately equal to the Ldn.

The effects of noise on people can be listed in three general categories:

1) subjective effects of annoyance, nuisance, dissatisfaction;
2) interference with activities such as speech, sleep, learning;
3) physiological effects such as startle, hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Unfortunately, there is as yet no completely satisfactory measure of the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual past experiences with noise.

Thus, an important parameter in determining a person's subjective reaction to a new noise is the existing noise environment to which one has adapted: the so-called "ambient" noise. "Ambient" is defined as "the all-encompassing noise associated with a given environment, being a composite of sounds from many sources, near and far". In general, the more a new noise exceeds the previously existing ambient, the less acceptable the new noise will be judged by the hearers.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

a) Except in carefully controlled laboratory experiments, a change of only 1 dBA cannot be perceived.

b) Outside of the laboratory, a 3-dBA change is considered a just-noticeable difference.

c) A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.

d) A 10-dBA change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response.

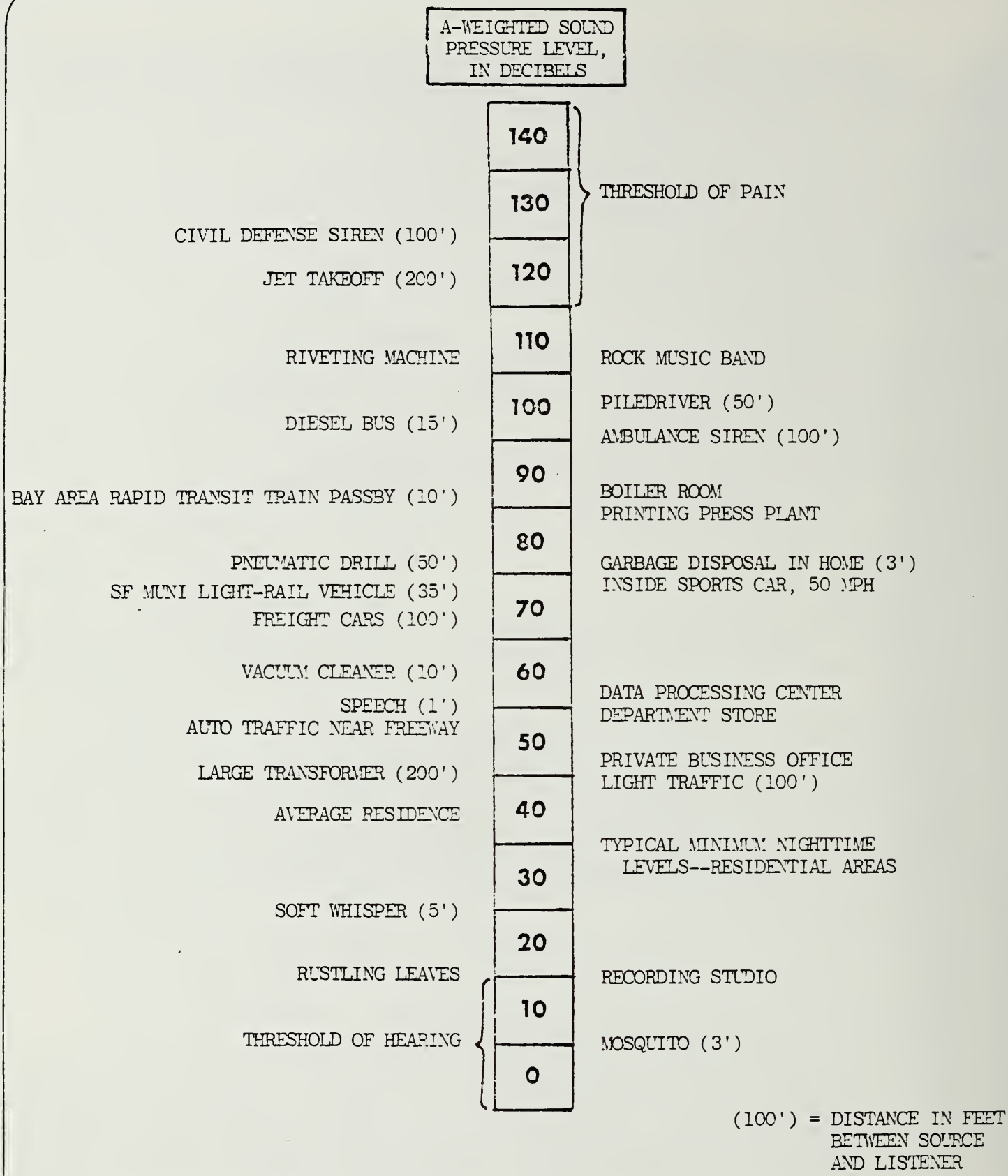

FIGURE A-1: TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

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APPENDIX D: COGENERATION SYSTEMS

Cogeneration is the production of both thermal (heat) and electrical energy by the combustion of a single fuel. Cogeneration has been used for decades as a means of producing energy; as early as the 1880's cogeneration was used throughout Europe and the United States.[1] With higher fuel costs and increased awareness of limited fossil fuel reserves, the greater energy efficiency of cogeneration, as compared to separate generation of electricity and heat, represents a viable and tested means of reducing fossil fuel consumption without decreasing energy production. Cogeneration can achieve an efficiency[2] greater than the 35% typical of electrical generation by utilities; it is estimated that the efficiency of the proposed USF Cogeneration Facility would be about 57%.

Both the City of San Francisco and the State of California have advocated cogeneration. The City of San Francisco, in Policy 3 of the Energy Element of the San Francisco Comprehensive Plan, states that, "cogeneration systems might provide an attractive investment for facilities such as schools and hospitals that have large space heating needs."[3] The California Legislature and the California Energy Commission (CEC) have established cogeneration as a preferred electricity and heat generation method and, in 1981, California

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1. Office of Technology Assessment, Industrial and Commercial Cogeneration: Summary, OTA-E-193, February 1983, p. 6, available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.
2. efficiency = the ratio of useful energy provided by a system to the energy supplied to it.
3. City of San Francisco, Comprehensive Plan: Energy Element, adopted June 1982, p. 14.

adopted a Blueprint for Cogeneration establishing as a goal the development of cogeneration projects producing a total of 400 mW[4] at California state facilities.[5] The CEC states that "each megawatt of electricity produced by cogeneration saves at least 1,000 barrels of oil a year, thereby reducing the need to import supplies."[5] Cogeneration also has advantages over other alternative energy sources in that the efficiency of cogeneration has been tested and demonstrated on a relatively large scale.[5]

There are 109 operating cogeneration facilities in California.[6] Twenty-six projects are under construction and an additional 236 projects are in either the permit or the planning stage. Of these 371 proposed and operating plants, 40 (11%) are at educational institutions and 47 (13%) are located in the nine-county San Francisco Bay Area (see Tables 4 and 5, pp. A-30 and A-31). Proposed cogeneration facilities at Bay Area educational institutions include projects at San Francisco State University (under construction), San Jose State University, Stanford University, the University of California at San Francisco, and the University of California at Berkeley.

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4. mW = megawatt = one million watts. Watt = the basic unit of electric power, equal to about 1/750 of one horsepower.
5. A. Gandara and S. Park, "Municipal Cogeneration," in California Energy Commission, Cogeneration in Municipalities: Proceedings from Workshops for Local Governments and Municipal Utilities, January 1982, pp. 8-9.
6. California Energy Commission, Cogeneration Project Tracking System: Report, 1 March 1983.

Table 4. Cogeneration Facilities at Educational Institutions in California*

Project Name	Location	Service Date	Capacity (mW)	Status
Proposed Project	San Francisco	1984-85	9.0	In permit process
CSU Chico	Chico	1984-85	6.7	Feasibility study completed
CSU Fresno	Fresno	1984-87	9.4	Feasibility study completed
CSU San Diego	San Diego	1984	0.3	Under construction
CSU San Diego	San Diego	1984-85	2.6	Advanced planning
CSU San Francisco	San Francisco	1984-87	0.8	Feasibility study completed
CSU San Jose	San Jose	1984	5.0	Feasibility study completed**
Cal Tech	Pasadena	In service	1.0	In service
Chaffey High School	San Bernardino	In service	0.1	In service
Harvey Mudd College	Claremont	In service	0.1	In service
Loma Linda Univ.	Loma Linda	In service	2.4	In service
Stanford Univ.	Stanford	1985	45.7	In permit process
UC Berkeley	Berkeley	1984-87	20.0 - 32.0	Feasibility study completed**
UC Davis	Davis	In service	3.5	In service
UC Santa Cruz	Santa Cruz	1984-87	2.4	Feasibility study completed**
UC San Francisco	San Francisco	1987	1.6	Advanced planning

* Selected from a total of 40 cogeneration projects at educational institutions. All projects listed use natural gas fuel.

** Request For Proposal (RFP) for third party financing has been released.

Source: California Energy Commission, Cogeneration Project Tracking System: Report, 1 March 1983 and Bendix Environmental Research, Inc.

Table 5. Cogeneration Facilities in the San Francisco Bay Area*

Project Name	Location	Service Date	Capacity (mW)	Status
Proposed Project (USF)	San Francisco	1984-85	9.0	In permit process
C & H Sugar	Crockett	1957	10.0	In service
Caterpillar Tractor	San Leandro	1982	2.5	In service
Crown Zellerbach	Antioch	1982	46.5	In service
Dow Chemical	Pittsburg	1977	55.0	In service
Fairfield/Anhauser Bush	Fairfield	1984	15.0	Advanced planning
Fairfield Civic Center	Fairfield	1984	0.8	Equipment RFP released
IBM	San Jose	1984-85	49.5	In permit process
Napa State Hospital	Napa	1984	1.6	Under construction
Oakland Airport	Oakland	Unknown	0.7	Advanced planning
Oakland City Center	Oakland	Unknown	38.0	Advanced planning
Paul Masson Winery	Saratoga	1981	0.3	In service
Pfizer Corporation	Emeryville	1984	2.7	Feasibility study completed
City of Santa Clara	Santa Clara	1980	5.8	In service

* Selected from a total of 47 cogeneration projects in the San Francisco Bay Area. All projects listed use natural gas fuel.

Source: California Energy Commission, Cogeneration Project Tracking System: Report, 1 March 1983, and Bendix Environmental Research, Inc.

APPENDIX E: LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

Level of Service	Description
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can be generally described as very good.
C	Level of Service C describes a condition where the approach to an intersection if often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operations can generally be described as fair.
E	Capacity occurs at Level of Service E. It represents the most number of vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting up-stream of the intersection and vehicles may be delayed up to several signal cycles.
F	Level of Service F represents a jammed condition. Backups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.

Source: San Francisco Department of Public Works, Traffic Division, Bureau of Engineering, 1965.